

KENTUCKY ECONOMY Review & Perspective

THE KENTUCKY COUNCIL OF ECONOMIC ADVISORS

University of Kentucky, Lexington, Kentucky 40506

September 1979

Vol. 3 No. 3

KCEA Review and Forecast

By Charles W. Hultman*

Early figures suggest that one of the longest peacetime periods of continued economic growth ended during the first part of 1979. The expansion, which started in March of 1975, resulted in a relatively high rate of growth in real GNP and increased use of the nation's working age population. However, especially in recent years, it also generated a high rate of inflation, a slow growth in productivity, and balance of payments difficulties.

A major concern is whether or not the 2.4 percent drop in second quarter real Gross National Product will develop into a long and/or severe recession. Much of the decline in the second quarter was related to energy and motor vehicles. A decision on the part of consumers to shift back in favor of larger cars and a rate of inflation which does not require unusually restrictive monetary and fiscal restraint may mean the recession is both mild and short lived. However, efforts at the national level to reduce the rate of inflation may not have a significant impact on the price level, but instead may contribute to a contractive effect on production and employment.

The latest forecast for the U.S. economy made by Wharton Econometric Associates is dated 1 August 1979. This forecast, which is used as a basis for the Kentucky Quarterly Econometric Model forecast, projects a slight decline in real GNP for each of the last three quarters of 1979; for the entire year, real GNP is expected to increase only by about 1.25 percent. Wharton also projects positive real GNP growth during the first three months of 1980. Inflation would remain at the double digit level for both 1979 and 1980; the unemployment rate would increase from 6.0 percent in 1978 to 6.1 percent in 1979 and to 7.3 percent in 1980.

A mild and short-lived recession may mean that Kentucky Personal Income will continue to grow, although much of this growth is likely to reflect price inflation. The Kentucky Quarterly Model (see pages 3-5) projects Personal Income to rise by 13.4 percent from \$23.25 billion in 1978 to \$26.37 billion in 1979 and by 11.3 percent to \$29.34 billion in 1980. If inflationary effects are taken into consideration, real Per-

sonal Income can still be expected to rise by 2 to 3 percent in both 1979 and 1980.

The civilian labor force is projected to rise from 1,583 (see Technical Note, page 12) thousand in 1978 to 1,644 thousand in 1979 and 1,650 thousand in 1980. The unemployment rate is expected to increase somewhat in both 1979 and 1980 but to remain below the national average.

Continued net employment expansion is expected in such sections as coal mining, wholesale and retail trade, finance, insurance, and real estate, and services. A net decline in employment is anticipated in manufacturing, contract construction, federal government and agriculture.

Conditions in Kentucky will be affected not only by the degree of monetary and fiscal restraint imposed at the national level, and developments in the automobile industry, but also by consumer and investor expectations regarding the future of coal as a source of energy. A firm and early commitment on the part of the Carter administration and Congress will stimulate production in the coal and related industries of the Commonwealth. Expected increases in U.S. agricultural exports will also help the Kentucky agricultural sector.

Inflation will remain a continuing concern to Kentuckians as well as the nation, especially those on a relatively fixed income. The Consumer Price Index stood at 216.6 in June (with 1967 = 100). Most seriously affected has been the consumer purchase of medical care, food and beverages, and housing.

In conclusion, existing data suggest that the U.S. is in the early part of what is projected to be a mild recession. Recovery, in the sense of a rising real GNP, is expected in early 1980 although the unemployment rate will continue to rise slightly and inflation remains a problem. The Kentucky economy will probably be affected less adversely than the national economy, particularly with early federal legislation which promotes coal usage and with increased strength in the auto industry.

*Charles W. Hultman is the Associate Dean of the Office for Research, College of Business and Economics, University of Kentucky, and Chairman of the KCEA.



In recent months, Governor Julian M. Carroll has appointed two new members to the Kentucky Council of Economic Advisors: **John B. Clarke**, Louisville and **John S. Swift**, Lexington.

John B. Clarke is Manager of Community Affairs and Facilities Services Operation at the General Electric Company, Louisville, and has been with G.E. since 1940. Throughout his career he has been involved with a variety of professional and community organizations. Currently Mr. Clarke is Chairman of the Executive Committee of the Kentucky Chamber of Commerce, Chairman of the Board of Housing NOW, Inc., and a former Chairman of the Board of Associated Industries of Kentucky. He serves on the Board of Directors for several

KENTUCKY ECONOMY Review & Perspective

Published by the
Kentucky Council of Economic Advisors
451 Commerce Building
University of Kentucky
Lexington, Kentucky 40506
(606) 258-4626

Charles G. Renfro, Acting Executive Director
Margaret O'Neill Adams, Editor

The *Kentucky Economy: Review and Perspective* is paid for with state funds and published by the Kentucky Council of Economic Advisors (KCEA) Research Staff. The KCEA is a state government agency, staff support for which is provided by the Center for Applied Economic Research, a unit of the Office for Research, College of Business and Economics, University of Kentucky.

This quarterly publication is intended, primarily, to provide forecasts and current information concerning the Kentucky economy. More generally it provides a forum for the publication of short, expository articles dealing with current research or information systems, the focus of which is some aspect of the Kentucky economy.

Articles submitted for publication should be sent to the Editor at the address given above. All submissions will be reviewed independently by persons recognized as knowledgeable in the specific subject discussed. However, the ultimate responsibility for content rests with the author.

Materials appearing in this publication may be reproduced without permission, although credit to the source is appreciated.

Subscriptions to *Kentucky Economy: Review and Perspective* are available, without cost, upon request. Please inform us if you receive multiple copies or if you wish to discontinue your subscription.

organizations and serves on a number of commissions, including the (Louisville) Metropolitan Economic Advisory Commission, the Kentucky Economic Development Commission, the Kentucky Energy Council and the Kentucky Minority Business Advisory Commission. Mr. Clarke attended Pennsylvania State College and the Graduate School of Business, Columbia University. He replaces General Dillman Rash, also of Louisville, whose term on the KCEA has expired. Mr. Clarke's term extends to January 1983.

John S. Swift, treasurer of the First Security Corporation of Kentucky, and a first vice president of First Security National Bank and Trust Company of Lexington, is an alumnus of the University of Kentucky and of the School of Bank Administration at the University of Wisconsin. He is active in several professional and community organizations, among them, the Central Kentucky Chapter of the Bank Administration Institute, the United Way of the Bluegrass, the Bluegrass Council of the Boy Scouts of America and the Bluegrass Chapter of the National Association of Accountants. He was director of the National Association of Accountants during 1965-67. Mr. Swift replaces William L. Rouse, also from Lexington, who has resigned from the KCEA. His term on the Council will extend to January 1981.

We welcome both men to the Kentucky Council of Economic Advisors and are pleased to benefit from the perspectives they bring.

* * *

Training sessions in the use of the Kentucky Economic Information System—Frankfort are well under way. Personnel from the Bureau of Computer Services, the Council on Higher Education, the Development Cabinet, the Legislative Research Commission, and from the Kentucky Departments of Labor, Natural Resources and Environmental Protection, Revenue, and Transportation have participated. Participants in the EIS/Frankfort training sessions have received a draft of Part IV to the *EIS User Manual*, describing the capabilities of the Kentucky Economic Information System—Frankfort. Persons from other state agencies who wish to schedule an EIS/Frankfort training session should contact Margaret O. Adams, Manager, KEIS, 606-258-4626.

* * *

The *Council of Economic Advisors Annual Report—1979* has been published. It includes a chapter on the national economic situation, another on the Kentucky economic situation, a chapter comparing the Kentucky economy with those of several other states, two chapters considering Kentucky taxes, and a final chapter dealing with the energy factors affecting the Kentucky economy. Single copies of the *Annual Report—1979* may be obtained from the KCEA.

The Council of Economic Advisors has also recently published the eighth in its continuing series of policy papers: "Toward a Debt Policy for Kentucky," by Richard E. Gift. In
(continued on page 10)

Kentucky Econometric Model Forecast

By Charles G. Renfro*

This forecast for Kentucky is based upon an assumed three quarter decline in real GNP from the second through the fourth quarter of 1979. The forecast assumptions include predictions of the values of national economic variables taken from the August 1, 1979 *Control Forecast* made by the Wharton Econometric Forecasting Associates, using the Wharton Quarterly Econometric Model of the United States.

The likely impact on Kentucky of the projected three quarter national recession is shown in tables on this page and pages 4 and 5 to include a three quarter decline in non-agricultural wage and salary employment, beginning in the third quarter of 1979. During 1980, a recovery in employment is projected; however, year-to-year, between 1979 and 1980, there is a net decline. In contrast, aggregate personal income continues to increase throughout the forecast period, but since the rate of inflation in both 1979 and 1980 may exceed 10 percent, the lion's share of the personal income increase is likely to be consumed by this inflation.

It is important to note that all the figures shown for 1978 are *forecasts*. Although preliminary employment and personal income estimates for 1978 have been published—and can be retrieved from the Kentucky Economic Information System data banks—not all of the 1978 data used by the Kentucky Quarterly Model are yet available. See also *Technical Note* on page 12.

*Charles G. Renfro is Acting Executive Director of the KCEA.

ANNUAL SUMMARY TABLE
SELECTED ECONOMIC INDICATORS

Description	1978	1979	1980
Personal Income (Millions)	23249.3	26374.2	29340.4
% Chg.: Ky. Personal Income	13.07	13.44	11.25
Wage and Salary Disbursement	14132.0	15975.2	17681.9
Mfg. Wage & Salaries	4148.3	4669.2	5312.9
Non-Mfg. Wage & Salaries	9983.7	11305.9	12369.1
Non-Agri. Wage & Salary Empl.	1230.9	1262.7	1254.0
% Chg.: Ky. Non-Ag. Empl.	6.66	2.59	-0.69
Manufacturing Employment	294.0	291.3	290.3
Durable Goods	169.0	168.1	166.4
Non-Durable Goods	125.0	123.3	123.9
Non-Mfg., Non-Agri. Empl.	936.8	971.4	963.7
Civilian Labor Force	1583.4	1643.8	1650.3
Ky. Unemployment Rate (%)	5.1	5.6	6.2

Forecast Date: August 5, 1979.

QUARTERLY FORECAST TABLE
SELECTED ECONOMIC INDICATORS

Description	1979.1	1979.2	1979.3	1979.4	1980.1	1980.2	1980.3	1980.4
Personal Income (Millions)	25575.0	26173.3	26589.6	27159.1	28046.2	28774.6	29790.8	30750.0
% Chg.: Ky. Personal Income	12.46	9.69	6.52	8.85	13.72	10.80	14.89	13.52
Wage and Salary Disbursement	15655.7	15538.8	15990.7	16315.4	16935.4	17360.1	17890.1	18542.1
Mfg. Wage & Salaries	4666.7	4654.7	4619.5	4735.9	5027.8	5202.3	5383.6	5637.7
Non-Mfg. Wage & Salaries	10989.0	11284.0	11371.2	11579.4	11907.6	12157.8	12506.5	12904.3
Non-Agri. Wage & Salary Empl.	1262.1	1272.5	1264.3	1252.1	1243.9	1249.2	1258.0	1264.8
% Chg.: Ky. Non-Ag. Empl.	3.85	3.34	-2.56	-3.80	-2.58	1.72	2.83	2.19
Manufacturing Employment	297.4	292.5	288.8	286.7	286.1	288.0	291.9	295.3
Durable Goods	172.8	168.8	166.1	164.5	164.1	165.6	167.1	168.8
Non-Durable Goods	124.6	123.6	122.7	122.2	122.0	122.4	124.8	126.5
Non-Mfg., Non-Agri. Empl.	964.7	980.0	975.4	965.4	957.8	961.2	966.1	969.5
Civilian Labor Force	1634.4	1651.1	1648.4	1641.2	1635.8	1644.7	1656.2	1664.5
Ky. Unemployment Rate (%)	5.4	5.5	5.7	5.9	6.1	6.2	6.2	6.2

Forecast Date: August 5, 1979.

KENTUCKY QUARTERLY ECONOMETRIC MODEL FORECAST
PERSONAL INCOME

Description	Quarterly Forecast Data								Annual		
	1979.1	1979.2	1979.3	1979.4	1980.1	1980.2	1980.3	1980.4	1978	1979	1980
Personal Income (Millions)	25573.0	26173.3	26589.6	27189.1	28046.2	28774.6	29790.8	30750.0	25549.3	26374.2	29340.4
Wage & Salary Disbursements	15658.7	15938.8	15990.7	16318.4	16935.4	17360.1	17890.1	18542.1	14132.0	15978.2	17681.9
Non-Agril. Wages & Salaries	15486.8	15773.4	15822.6	16146.7	16761.6	17186.7	17718.0	18370.4	13996.5	15807.4	17509.2
Manufacturing	4666.7	4654.7	4619.5	4735.6	5017.8	5202.3	5383.6	5637.7	4148.3	4669.2	5312.9
Durable Goods	2786.9	2741.8	2692.1	2752.2	2909.8	2980.9	3097.8	3244.5	2493.7	2743.2	3058.2
Non-Durable Goods	1879.8	1913.0	1927.4	1983.8	2118.1	2221.5	2285.8	2393.1	1655.6	1926.0	2254.6
Mining	1228.1	1201.1	1199.5	1224.9	1304.9	1385.0	1439.2	1486.4	915.3	1211.0	1454.1
Coal Mining	1157.1	1130.8	1118.0	1143.8	1226.4	1302.6	1351.3	1393.7	854.4	1138.8	1318.5
Other Mining	71.0	70.3	71.5	81.1	80.5	82.4	87.9	92.7	61.0	72.2	85.6
Contract Construction	809.9	830.5	779.6	821.2	843.4	761.4	795.3	853.1	814.0	787.8	789.4
Regulated Industries	1100.9	1135.9	1134.6	1224.6	1250.7	1260.3	1282.7	1345.9	974.2	1154.0	1284.9
Wholesale & Retail Trade	2454.1	2536.0	2581.0	2694.1	2646.7	2715.9	2802.1	2891.4	2236.3	2546.1	2764.0
Services	1908.0	2018.7	2031.4	2095.1	2178.1	2199.7	2293.4	2369.6	1727.6	2012.7	2260.0
Finance, Ins. & Real Estate	546.3	590.3	642.3	679.3	713.9	731.2	782.1	779.1	484.8	614.5	746.6
Government	2772.7	2759.6	2824.5	2860.0	2893.9	2930.1	2960.5	3003.0	2695.8	2811.8	2947.4
Civilian Government	2231.7	2293.6	2318.4	2350.9	2380.9	2408.1	2434.5	2471.0	2212.1	2309.1	2433.6
Federal Civilian	630.1	615.0	616.8	627.8	634.2	637.1	638.9	650.3	605.8	617.4	640.1
State & Local Gov't	1661.5	1680.6	1701.7	1723.2	1746.7	1771.0	1795.7	1820.7	1606.5	1691.7	1783.5
Federal Military	501.0	494.0	496.0	493.0	475.0	472.0	476.0	472.0	483.5	502.8	523.8
Agricultural Wage & Salary	168.9	168.4	168.1	168.7	173.9	173.8	172.1	171.7	135.7	167.8	172.8
Other Labor Income	1812.9	1874.4	1893.0	1903.5	2081.2	2168.1	2254.7	2401.6	1623.4	1885.8	2231.5
Proprietors Net Income	2534.7	2557.0	2570.4	2633.0	2585.4	2591.8	2587.2	2590.4	2139.2	2546.0	2581.2
Non-Agril.	1758.1	1849.0	1850.1	1926.3	1848.7	1816.0	1880.8	1990.7	1633.6	1821.4	1926.2
Farm	776.0	708.0	719.7	717.2	706.6	675.8	636.4	599.5	505.6	724.6	654.6
Residence Adjustment	266.8	270.6	271.9	280.8	298.8	307.1	313.6	324.6	259.8	272.5	311.0
Other Income Items	6456.0	6673.4	7003.9	7209.8	7403.8	7597.4	8001.9	8196.1	6073.5	6835.5	7799.8
Property Income	2821.2	2934.7	2958.7	3054.3	3058.3	3092.7	3138.3	3195.9	2678.7	2939.8	3120.5
Transfer Payments	3634.8	3738.4	4045.2	4155.5	4345.5	4504.7	4863.6	5000.2	3394.7	3895.7	4679.3
Less: Personal Contributions for Social Insurance	1131.0	1138.0	1145.8	1157.2	1213.1	1249.8	1276.0	1305.1	958.6	1142.7	1263.0

Forecast Date: August 5, 1979

selected indicators OF ECONOMIC ACTIVITY

These tables of selected indicators of economic activity were prepared by a special-purpose program of the Kentucky Economic Information System. The data in the tables are reported figures which were obtained from a variety of state and federal agencies, as well as from private firms.

Apr. 1979	May 1979	Jun. 1979	Qtr. II 1979	% Chg. 79-1 79-11	% Chg. 78-11 79-11
--------------	-------------	--------------	-----------------	-------------------------	--------------------------

UNITED STATES DATA

CONSUMER PRICE INDEXES (1967=100)					
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ALL ITEMS	211.50	214.09	216.59	214.06	3.43 10.70
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), FOOD AND BEVER	226.29	228.19	229.29	227.93	2.81 10.95
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), HOUSING	219.29	222.39	225.50	222.56	3.31 11.24
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), APPAR & DRESS	165.39	166.09	165.69	165.73	2.22 3.99
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), TRANSPORTATION	202.09	207.69	212.59	207.73	6.05 13.35
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), MEDICAL	235.09	236.29	237.69	236.36	1.70 9.00
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ENTERTAINMENT	186.50	187.79	188.19	187.49	2.21 6.51
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), OTHER	193.19	193.09	194.50	193.86	1.11 7.46
PRODUCER PRICE INDEXES (1967=100)					
PRODUCER PRICE INDEX, ALL FINISHED GOODS	211.19	212.39	213.39	212.33	2.47 10.05
PRODUCER PRICE INDEX, FINISHED CONSUMER GOODS	210.00	211.29	212.39	211.23	2.64 10.43
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS	235.29	237.69	239.79	237.59	4.04 11.21
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS FOR MANUFACTURING	228.50	230.29	231.50	230.09	3.89 11.51
PRODUCER PRICE INDEX, CRUDE MATERIALS	279.89	282.19	283.00	281.69	4.69 16.51
PRODUCER PRICE INDEX, CRUDE FOODSTUFFS AND FEEDSTUFFS	251.59	251.89	248.19	250.56	3.85 14.04
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL (SPOT) (1967=100)	391.69	392.19	392.00	391.96	-0.74 -2.89
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL (CONTRACT) (JUNE '78=100)	126.00	127.29	127.59	126.96	1.76 6.70
LABOR FORCE (MILLIONS)					
LABOR FORCE, CIVILIAN, SEASONALLY ADJUSTED	102.11	102.24	102.52	102.29	-0.17 2.08
UNEMPLOYMENT RATE, TOTAL, SEASONALLY ADJUSTED	5.79	5.19	6.00	5.66	-1.04 -4.49
UNEMPLOYMENT RATE, BLACKS & OTHER RACIAL MIN. (SEAS ADJ)	11.79	10.59	12.39	11.59	1.45 -3.33
EMPLOYMENT, TOTAL, SEASONALLY ADJUSTED	96.12	96.31	96.75	96.41	-0.18 2.30
PERSONAL INCOME, TOTAL, SEASONALLY ADJUSTED AT AN ANNUAL RATE	1081.19	1093.59	1093.00	1092.59	2.77 12.49
PRIVATE RESIDENTIAL BLDG. 16000 PERMIT ISSUING PLACES (5000)	1517.00	1618.00	1684.00	1681.00	7.37 14.75
TOTAL INSTALLMENT CREDIT OUTSTANDING AT END OF MONTH	202.64	205.77	208.65	205.49	4.03 20.76
COMPOSITE INDEX OF 12 LEADING INDICATORS	140.69	141.09	140.89	140.89	-1.65 -0.75
INDEX OF INDUSTRIAL PRODUCTION, SEASONALLY ADJUSTED	150.00	151.79	151.39	151.06	-0.26 4.90
INTEREST RATE, YIELD ON 3-MONTH TREASURY BILLS	9.48	9.58	9.03	9.37	0.14 44.62
INCOME AND CREDIT IN BILLIONS OF DOLLARS: PERMITS IN THOUSANDS; INDUSTRIAL PRODUCTION & 12 LEADING INDICATORS—1967=100					

KENTUCKY DATA

LABOR FORCE (000 PERSONS)					
LABOR FORCE, TOTAL CIVILIAN	1511.00	1521.19	1546.89	1526.36	1.06 -1.96
UNEMPLOYMENT RATE (NOT SEASONALLY ADJUSTED)	4.69	4.19	4.79	4.56	-30.45 4.77
EMPLOYMENT, TOTAL, BY PLACE OF RESIDENCE (INCL. PERSONS ON STRIKE)	1440.50	1457.09	1472.09	1456.56	3.32 -1.76
EMPLOYMENT, AGRICULTURAL	62.59	70.89	86.19	73.23	38.96 -2.45
EMPLOYMENT, TOTAL NON-AGRICULTURAL WAGE AND SALARY	1222.09	1284.49	1381.50	1279.33	3.11 31.70
EMPLOYMENT, BITUMINOUS COAL & LIGNITE MINING (SIC 12)	54.19	53.79	54.29	54.09	0.61 1.19
EMPLOYMENT, CONTRACT CONSTRUCTION	68.50	73.89	75.00	72.46	21.52 1.77
EMPLOYMENT, TOTAL MANUFACTURING	293.69	295.09	293.59	294.19	0.70 1.92
EMPLOYMENT, MANUFACTURING, DURABLE	171.00	170.79	168.39	170.06	0.81 3.02
EMPLOYMENT, MANUFACTURING, NON-DURABLE	122.69	124.50	125.19	124.13	0.56 0.45
EMPLOYMENT, TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES	68.09	69.89	70.69	69.56	0.82 2.96
EMPLOYMENT, WHOLESALE & RETAIL TRADE	279.59	280.59	281.79	280.66	4.15 7.05
EMPLOYMENT, FINANCE, INSURANCE & REAL ESTATE (SIC 60-67)	50.19	50.50	51.09	50.56	2.56 3.33
EMPLOYMENT, SERVICES (SIC 70-80)	209.79	212.19	212.29	211.43	3.55 5.45
EMPLOYMENT, CIVILIAN GOVERNMENT	743.39	743.39	738.00	741.59	1.13 2.82
EMPLOYMENT, STATE & LOCAL GOVERNMENT	63.29	203.19	197.49	201.33	0.85 3.83

	Apr. 1979	May 1979	Jun. 1979	Qtr. II 1979	%Chg. 79-1 79-11	%Chg. 78-11 79-11
HOURS AND EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING						
AVG WEEKLY HOURS, PROD. WORKERS, TOTAL MANUFACTURING	37.09	39.59	39.79	39.13	-0.76	1.26
AVG WEEKLY HOURS, PROD. WORKERS, MANUFACTURING DURABLES	39.08	40.19	40.69	39.63	-0.40	-1.73
AVG WEEKLY HOURS, PROD. WORKERS, NON-DURABLE MANUFACTURING	37.69	39.08	38.69	38.46	-1.49	-0.60
AVG HOURLY EARN, PROD. WORKERS, TOTAL MANUFACTURING	6.69	6.77	6.78	6.75	-0.29	9.69
AVG HOURLY EARN, PROD. WORKERS, MANUFACTURING DURABLES	7.02	7.03	7.07	7.06	0.01	11.11
AVG HOURLY EARN, PROD. WORKERS, NON-DURABLE MANUFACTURING	6.25	6.16	6.39	6.34	-4.10	-6.25
AVG WEEKLY EARN, PROD. WORKERS, TOTAL MANUFACTURING	253.92	269.18	270.23	264.44	-2.22	7.23
AVG WEEKLY EARN, PROD. WORKERS, MANUFACTURING DURABLES	287.13	294.61	298.15	279.97	-6.18	9.19
AVG WEEKLY EARN, PROD. WORKERS, NON-DURABLE MANUFACTURING	236.00	248.42	247.67	244.02	-5.62	-5.53
INDEX OF PRICES RECEIVED BY KY FARMERS (1972=100)						
INDEX OF PRICES REC'D BY KY FARMERS, PROD AND LIVESTOCK PRODUCTS	174.15	171.74	166.74	170.71	-4.91	19.84
INDEX OF PRICES REC'D BY KY FARMERS, LIVESTOCK PRODUCTS	203.52	197.29	192.69	194.50	-6.10	16.82
INDEX OF PRICES REC'D BY KY FARMERS, CROPS	155.71	155.87	155.00	155.75	0.99	2.98
MINING (MILLIONS OF TONS, MILLIONS OF DOLLARS)						
PHYSICAL OUTPUT OF COAL, EASTERN KENTUCKY - NOT SEAS ADJUSTED	5.64	6.19	79.01	25.66	-12.11	4.79
PHYSICAL OUTPUT OF COAL, WESTERN KENTUCKY - NOT SEAS ADJUSTED	7.79	8.07	8.44	12.52	23.71	0.71
AVG HOURLY EARN, PROD. WORKERS, BITUMINOUS COAL AND LTD. MINING	10.61	10.62	11.57	10.94	9.76	13.24
AVG WEEKLY EARN, PROD. WORKERS, BITUMINOUS COAL & LIGNITE MINING	448.15	449.64	504.38	467.56	-4.01	23.13
AVG WEEKLY HOURS, PROD. WORKERS, BITUMINOUS COAL & LIGNITE MINING	42.19	42.29	43.59	42.69	-0.25	0.95
TAX RECEIPTS, KENTUCKY, COAL SEVERANCE TAX	12.60	14.32	15.08	42.81	*	6.05
CONSTRUCTION (MILLIONS OF \$, NO. OF PRIVATE RESID. UNITS - NOT SEAS ADJ.)						
VALUE OF CONSTRUCTION CONTRACTS, RESIDENTIAL & NON RES.	87.00	163.00	159.00	409.00	1.76	56.85
PERMIT AUTHORIZED CONSTRUCTION, NO. OF 1-FAMILY RESID. UNITS	1032.00	1043.00	1005.00	2960.00	85.92	7.50
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, 1-FAMILY RESID. UNITS	58.22	32.36	36.14	116.74	99.61	4.20
PERMIT AUTHORIZED CONSTRUCTION, NO. OF RESID. UNITS, TOTAL	1407.00	1408.00	1221.00	4115.00	76.88	15.58
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, ALL UNITS, TOTAL	44.07	49.76	46.52	140.76	93.22	-10.58
ELECTRIC POWER SALES (MIL. KWH)						
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST. INC. DOE	1467.74	1474.70	NA	NA	NA	NA
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST. EX. DOE	2043.93	2057.20	NA	NA	NA	NA
ELECTRICITY SALES, KWH, TO DEPARTMENT OF ENERGY	1363.06	1417.52	NA	NA	NA	NA
RETAIL SALES (000\$, 000 CARS)						
TAX RECEIPTS, KENTUCKY, SALES AND GROSS RECEIPTS TAXES	58.74	57.20	66.91	176.86	*	7.21
NEW PASSENGER CAR REGISTRATIONS, TOTAL, NOT SEAS. ADJ.	8.46	11.07	25.10	44.64	148.02	125.82
FINANCE AND INSURANCE (MILLIONS OF DOLLARS)						
NET LOANS MADE & ACQUIRED BY KY. SAVINGS & LOAN ASSOCIATIONS	55.74	60.60	77.90	201.75	106.46	26.80
SALES OF ORDINARY LIFE INSURANCE	351.25	369.72	350.47	1071.46	11.95	11.59
SELECTED STATE GOVERNMENT RECEIPTS (000 \$)						
GENERAL FUND TAX AND NON-TAX REVENUES (MILLIONS OF DOLLARS)	104.77	162.46	173.05	440.28	*	7.89
TAX RECEIPTS, KENTUCKY, SALES AND USE TAXES, TOTAL	36.47	52.88	52.88	152.16	*	7.82
TAX RECEIPTS, KENTUCKY, INCOME TAX, INDIVIDUAL	14.84	68.01	60.16	113.02	*	9.15
TAX RECEIPTS, KENTUCKY, INCOME TAX, CORPORATION	16.60	8.61	47.04	68.34	*	11.86
TAX RECEIPTS, TRANSPORTATION FUND, STATE ROAD FUND, STATE SHARE	51.70	48.83	30.30	102.34	*	5.55
TAX RECEIPTS, KENTUCKY, MOTOR VEHICLE NORMAL TAX, TOTAL	7.46	23.67	16.15	49.29	*	-4.22
TAX RECEIPTS, MOTOR VEHICLE USAGE TAX (INC. RENTALS)	11.05	10.83	10.87	32.56	*	7.95

* - QUARTER TO QUARTER COMPARISONS NOT MEANINGFUL DUE TO SEASONAL VARIATIONS
NA - NOT AVAILABLE AT PUBLICATION TIME

The Development Information System for Kentucky

By Barbara Matthews*

The recent years have brought increased interest in computerized information systems and several are available in Kentucky. Most notable is the Kentucky Economic Information System (EIS).¹ The Development Information System for Kentucky (DISK), described in this article, is a complementary computerized system of socio-economic data for Kentucky and is a part of the Agricultural Network Serving Education and Research (ANSER). ANSER is a service of the Kentucky Cooperative Extension Service.

Access to DISK will provide county extension staff and their clients, via computer terminal, tabularized data for each Kentucky county on such subjects as population, income, employment, and other indicators. A proposed analytical package will allow simple data manipulations to show trends in the data or for cross-sectional comparison of two counties or a county with a region. Capability to chart and plot the data will be added to enhance the description of the data. Finally, simulations and other statistical models will be added to the system to maximize the utility of the data.

The development of DISK is a pilot project funded through Title V of the Rural Development Act of 1972. The developers of the system are the Departments of Rural Sociology and Agricultural Economics of the University of Kentucky College of Agriculture and Cooperative Extension Service. During the pilot phase the system is available in the Lincoln Trail (North Central Kentucky) and Wilderness Trail (Southeast Kentucky) Extension areas for testing. If the system receives good response in these areas, the information for other counties will be released and those counties will have access to the system.

The purpose of the DISK project is to provide a problem-solving tool for Extension staff and their clients. The focus of the system is to address rural development issues. Common issues which fall within the rural development domain include industrial development, fire protection service, and impact of population growth. Persons who are in the position of establishing policy or plans for a community or county are those who could be most helped by DISK. DISK is intended to help

officials address developmental issues by giving access to the data which are pertinent to their decisions. Sometimes relevant data are not used in the decision-making process if they are not easily accessible or are not available in published form. The information system approach collapses volumes of information to one source, which eliminates the time-consuming search from one library source or government office to another. Also, duplication of effort by persons seeking the same information for other regions is eliminated. The end result is that data and procedures, not normally available to the local officials, can easily be used to support the decision-making process.

As previously mentioned, DISK is maintained on the Agricultural Network Serving Education and Research (ANSER). The ANSER network is composed of a Hewlett Packard mini-computer in the University of Kentucky College of Agriculture and this is connected to the IBM 370/165 at the University of Kentucky Computing Center. The network is completed by the connection of county extension offices with the Hewlett Packard through computer terminals and leased lines. This configuration allows for maximum flexibility to the users. They have the advantages of a large mainframe coupled with an understandable, easy-to-use, interactive support system. The orientation of the ANSER network is to provide programs which require little, if any, previous computer experience to use. The programs are completely self-explanatory and are standardized so procedures do not differ from one program to the next.

The internal structure of the DISK system is hierarchical, where responses to questions cycle the processing of the programs to different segments. Each of these segments in turn triggers new questions. The computer program is based on computer request-user response. When the user has entered sufficient information on the type of data and geographic level required, the data files are accessed and the information is retrieved. The system contains descriptive "help" information which the user can call out if the response is not clear. The option to move back to previous questions is also available. Here again the philosophy is to make a system which facilitates, as much as possible, access to the data.

The data are stored on an online disk pack on the Hewlett Packard computer. The user will have the option of requesting data by county, by an aggregate of counties of the user's choice, or aggregated by extension area, area development district, or the state. Although most of the data are maintained on a county-level, the data are, in some cases, more useful at other geographic levels. For example, information on characteristics of schools will be maintained on a school district level.

¹Editor's Note: The Kentucky Economic Information System (EIS), operational since 1973, is a public, computer-based source of time-series data on the Kentucky economy and includes computer programs to perform data manipulation and sophisticated statistical analysis. The EIS has been developed and is maintained by the research staff of the Kentucky Council of Economic Advisors. It is available for use by persons having access to the Kentucky state government computing system or to the Kentucky Educational Computing Network (KECNET). Access to the EIS has also been made available through the Agricultural Network Serving Education and Research (ANSER).

The EIS was described in an earlier article in this publication. See: Renfro, Charles, "The Kentucky Economic Information System," *Kentucky Economy: Review & Perspective*, Vol. 1, No. 2, May 1977. Reprints of that article and a brochure describing the EIS are available upon request from the KCEA, 451 Commerce Building, University of Kentucky, Lexington, Kentucky 40506.

*Barbara Matthews has been an Extension Research Associate and coordinator of the DISK project in the Department of Agriculture Economics, College of Agriculture, University of Kentucky.

Estimates of energy used are most applicable at a state-level and so are stored that way.

The data are organized by subject area. Thirteen subject areas are planned: 1) Population, 2) Employment, 3) Income, 4) Industry and Commerce, 5) Transportation and Communication, 6) Health and Safety, 7) Recreation, 8) Education, 9) Housing, 10) Government and Community Services, 11) Land Use, 12) Agriculture and Farm Management, and 13) Natural Resources, Energy, and Environment. Within each subject area, the data are organized in a table format and users retrieve an entire table of related data. Normally several years of data are included in one table. In some cases, where the data were collected through special survey, there are no comparative data for other years.

Major sources of data are the Censuses of Population, Agriculture and Governments (U.S. Bureau of the Census). Characteristics of the population of the counties are categorized, for example, by age, race, sex, and residence. Characteristics of the employed population are also available in various breakdowns. The Census of Agriculture provides much of the information for the Agriculture and Farm Management subject area. These figures are available for 1969 and 1974, the years of the two most recent surveys. Tabulations include value of machinery and property, subcomponents of income and expenses, and characteristics of farms by ownership. The variety gives a complete picture of the agricultural situation in Kentucky.

State-produced data are used whenever they are available. Land-use characteristics are taken from surveys conducted by the Kentucky Soil Conservation Service. The *Annual Report*

of the Kentucky Department of Mines and Minerals is the source of information on production and employment in mines. The *Annual Report* of the Kentucky Department of Revenue provides a wealth of tax revenue data useful for county planning.

To date, DISK contains over 500 data tables. The choice of data has followed the decision rules: 1) Would the data be widely used?, and 2) Can the data be readily added to the system? The design of the content of the system has followed expressed needs by potential users and is intended to give a good cross-sectional representation of the counties. Data which are not available in at least published summaries are not included since the updating process would be too cumbersome. The future work in DISK will concentrate on adding new data series, updating of tables with more current data, and creating an analytical component.

An important feature of DISK is the users' manual. The manual describes, in detail, the data contained in the tables. The sources of the data, the procedures used to collect the data, and the definitions applied are described. The manual is intended to assist users in the application of the data and interpretation of the results. The manual is presently in preliminary form and is available only to persons participating in the pilot project.

The following tables are output from a DISK run and are included to give the reader a graphic notion of the type of information which will be obtained with access to DISK.

EXAMPLE 1 - OUTPUT FROM DISK

T1 NUMBER EMPLOYED AND PRODUCTION OF COAL MINES: 1974-1977.

	LAUREL COUNTY			
	1974	1975	1976	1977
UNDERGROUND MINES:				
NUMBER OF MINES	17	15	6	3
PERSONS EMPLOYED	84	146	98	7
TONNAGE PRODUCED	76269	137430	32010	4398
SURFACE MINES:				
NUMBER OF MINES	49	112	73	64
PERSONS EMPLOYED	561	938	698	642
TONNAGE PRODUCED	951185	1400378	1173261	1354280
TOTAL ALL MINES:				
NUMBER OF MINES	66	127	79	67
PERSONS EMPLOYED	645	1084	796	649
TONNAGE PRODUCED	1027454	1537808	1205271	1358678

EXAMPLE 2 - OUTPUT FROM DISK

T14 FARM PRODUCTION EXPENSES; 1969, 1974

HARDIN COUNTY

FARMS WITH SALES
ALL FARMS OF \$2,500 & OVER
1969 1974 1969 1974

TOTAL FARM PRODUCTION EXPENSES IN THOUSANDS	8606	12679	7565	11758
SPECIFIC EXPENSES IN \$1,000				
LIVESTOCK & POULTRY PURCHASED	1645	1308	1496	1143
FEED FOR LIVESTOCK PURCHASED	1403	2511	1254	2314
COMMERCIALLY MIXED FORMULA FEEDS	754	1256	705	1180
FEED INGREDIENTS	NA	NA	215	688
WHOLE GRAINS	NA	NA	282	356
HAY, GREEN CHOP & SILAGE	NA	NA	53	90
ANIMAL HEALTH COSTS FOR LIVESTOCK & POULTRY	NA	NA	NA	92
SEEDS, BULBS, PLANTS & TREES	199	346	178	331
COMMERCIAL FERTILIZER	835	1975	733	1869
OTHER AG CHEMICALS	177	346	153	326
LIME	79	NA	63	68
GASOLINE & OTHER PETROLEUM FUEL & OIL FOR FARM BUSINESS	533	773	421	681
HIRED FARM LABOR	567	691	493	651
CONTRACT LABOR	236	30	20	26
MACHINE HIRE & CUSTOMWORK	Z	311	181	289
ALL OTHER PRODUCTION EXPENSES	3010	4387	2635	4035



(continued from page 2)

this paper, Professor Gift extends the historical analysis of the state debt, developed in Policy Paper No. 7, "The Kentucky State Debt." In the new paper, he defines the concept of debt capacity and finds that Kentucky's debt is currently well within its debt capacity. However, he strongly recommends that more complete and specific analyses be made of future debt-financed projects and proposes guidelines for the opera-

tion of the new office to be established within the Department of Finance to manage the state's debt. Single copies of this paper are available from the KCEA.

* * *

Margaret O. Adams became Manager of the Kentucky Economic Information System on July 1, 1979. She replaces Paul Coomes who has resigned. Ms. Adams is a graduate of Clarke College (Iowa) and holds a master of arts degree from the University of Wisconsin. She has been on the research staff of the KCEA for the past year. Prior to coming to Kentucky she held a number of professional positions, including several years as Assistant Director and Data Librarian of the Data and Program Library Service at the University of Wisconsin.

* * *

Dr. Charles W. Hultman, Chairman of the KCEA, participated late this spring with the Governor's Economic Develop-

ment Commission in its examination of the administrative recommendations to be made by the Development Commission. Given the growing public concern on the status of the economy, Dr. Hultman is increasingly consulted by the media and asked to comment on the state of the Kentucky economy. Recently he appeared on the WLEX, Channel 18 program, "Your Government" hosted by Sue Wiley and participated on one of the sessions of "Commonwealth Call-in" on WLAP-AM, hosted by Phil Lynch.

Dr. Charles G. Renfro, Acting Executive Director of the KCEA, presented a paper, "Regional Econometric Modeling in the 1980s: Where do we go from here?" at the National Science Foundation-sponsored Conference on Modeling the Multi-regional Economic System, held in Philadelphia, June 14-15, 1979. More recently he presided at a workshop on state and regional econometric models at the summer workshops sponsored by the Association for University Business and Economic Research (AUBER) and held at the Kellogg Center, Michigan State University, August 19-21, 1979.

The Kentucky Economic Association will hold its fifth annual meeting on Friday, October 26, 1979. The meetings are scheduled to be held at the Hyatt Regency in Louisville.

Sessions of the meeting will consider a variety of issues related to the economy of the Commonwealth: economic education in Kentucky, simplification of the Kentucky income tax, economic development in Kentucky: urban vs. rural, and the economic outlook for Kentucky. Roy Bahl, Director of the Urban Studies Institute, the Maxwell School, Syracuse University will give the luncheon address. He will be speaking on the relationship between the federal budget and the cities, or, what the federal government can do concerning urban problems. For further information contact Kris Hobson, 451 Commerce Building, University of Kentucky, Lexington, Kentucky 40506, or phone, 606-258-4626.

* * *

In August 1979 the U.S. Bureau of the Census issued the estimates of the population of Kentucky counties: July 1, 1977 (revised) and 1978 (provisional). These estimates were prepared by the Urban Studies Center at the University of Louisville as part of the federal-state cooperative program for population estimates. A rank-ordered table of these 1978 Kentucky county-level population estimates is reprinted below.

KENTUCKY ECONOMIC INFORMATION SYSTEM
POPULATION OF KENTUCKY COUNTIES IN RANK ORDER
1978

RANK	COUNTY	POPULATION	RANK	COUNTY	POPULATION	RANK	COUNTY	POPULATION
1	JEFFERSON	478.2	41	OHIO	21.9	81	FLEMING	11.7
2	FAYETTE	191.6	42	CLAY	21.8	82	HENRY	11.7
3	KENTON	132.0	43	SHELBY	21.3	83	LARUE	11.6
4	CAMPBELL	83.8	44	MEADE	21.1	84	ANDERSON	11.4
5	DAVIESS	81.1	45	SCOTT	20.2	85	MORGAN	11.2
6	HARDIN	78.3	46	BOURBON	19.7	86	GREEN	11.0
7	PIKE	73.8	47	GRAYSON	19.5	87	PENDLETON	10.9
8	CHRISTIAN	67.6	48	TAYLOR	18.9	88	MCLAIN	10.8
9	WARREN	64.4	49	LINCOLN	18.3	89	BUTLER	10.6
10	MCCRACKEN	62.7	50	KNOTT	18.2	90	JACKSON	10.6
11	BOYD	54.9	51	MERCER	18.1	91	WASHINGTON	10.4
12	MADISON	49.5	52	MONTGOMERY	18.0	92	GARRARD	10.1
13	HOPKINS	45.4	53	UNION	18.0	93	TRIGG	10.0
14	FLOYD	43.5	54	ROWAN	17.5	94	POWELL	9.6
15	PULASKI	43.4	55	MASON	17.2	95	EDMONSON	9.5
16	BOONE	41.8	56	BREATHITT	17.1	96	LIVINGSTON	9.5
17	MARLAN	40.9	57	MARTIN	17.0	97	BATH	9.4
18	FRANKLIN	39.2	58	WOODFORD	17.0	98	CRITTENDEN	9.2
19	BULLITT	39.1	59	WAYNE	16.4	99	FULTON	9.1
20	HENDERSON	38.7	60	BRECKINRIDGE	16.0	100	BALLARD	9.0
21	GREENUP	37.0	61	HART	15.3	101	CLINTON	8.9
22	LAUREL	35.2	62	MCCREARY	15.2	102	CARROLL	8.8
23	BELL	33.5	63	WEBSTER	15.2	103	METCALFE	8.7
24	GRAVES	33.1	64	HARRISON	14.8	104	OWEN	8.3
25	MUHLENBERG	32.0	65	CASEY	14.6	105	BRACKEN	7.7
26	BARREN	30.9	66	SIMPSON	14.5	106	HANCOCK	7.4
27	WHITLEY	30.9	67	ADAIR	14.2	107	LEE	7.4
28	PERRY	29.5	68	LEWIS	13.9	108	CUMBERLAND	7.2
29	CALLOWAY	28.9	69	LESLIE	13.7	109	NICHOLAS	7.0
30	KNOX	28.7	70	ESTILL	13.6	110	ELLIOTT	6.4
31	LETCHER	27.8	71	ROCKCASTLE	13.4	111	WOLFE	6.4
32	CLARK	26.9	72	ALLEN	13.3	112	CARLISLE	6.3
33	NELSON	26.4	73	CALDWELL	13.2	113	HICKMAN	6.2
34	MARSHALL	24.4	74	LAWRENCE	12.8	114	LYON	6.2
35	JESSAMINE	24.3	75	MARTIN	12.5	115	TRIMBLE	5.9
36	BOYLE	23.9	76	GRANT	12.3	116	SPENCER	5.8
37	OLDHAM	23.4	77	MAGOFFIN	12.3	117	OWSLEY	5.5
38	CARTER	23.3	78	RUSSELL	12.2	118	MEWEE	4.7
39	JOHNSON	22.7	79	TODD	12.1	119	GALLATIN	4.6
40	LOGAN	22.3	80	MUNROE	12.0	120	ROBERTSON	2.1

DATA ARE GIVEN IN THOUSANDS
SOURCE: U.S. BUREAU OF THE CENSUS; URBAN STUDIES CENTER, UNIVERSITY OF LOUISVILLE

TECHNICAL NOTE

Conceptually, the civilian labor force for Kentucky consists of those state residents who are either working or are looking for work; that is, the sum of the employed and the unemployed.¹ However, the figures reported in "Selected Indicators of Economic Activity" (page 7) for the Kentucky civilian labor force, as well as for total employment and unemployment, are obtained on the basis of interviews with a small sample of households, not by counting the employed and the unemployed. These interviews are conducted by the U.S. Bureau of the Census as a part of the Current Population Survey (CPS) program.

Alternative sources of estimates of employment and unemployment are the "790" and "ES-202" programs operated by the U.S. Bureau of Labor Statistics, jointly with the Kentucky Department for Human Resources. Predicted values of some of these estimates for individual industries appear in the model forecast tables on pages 3 and 5. However, the 790 and ES-202 programs fall short of providing conceptually adequate estimates of total employment and unemployment.² The employment estimates are obtained on the basis of reports filed by a large sample of employers, and are therefore estimates of employment by place of work, not by place of residence. The unemployment estimates obtained as a count are obtained on the basis of unemployment insurance claims, and consequently exclude those not eligible or who do not apply. Adjustments must be made in order to obtain an estimate of the total unemployed; the best known, most widely used adjustment procedure is the "70 Step Method."

Consequently there are two methods of estimating the civilian labor force and total employment. However, there

should be a stable relationship between the alternative estimates, since the conceptual difference between *employment by place of residence* and *employment by place of work* is *net employment-out-of-state*. Judging on the basis of independent evidence, for Kentucky this residence adjustment, *net employment-out-of-state*, should be positive and should not change drastically over short periods of time.

In fact, this *net employment-out-of-state* figure has recently been negative and during the past six months has increasingly become more negative.³ It is likely that the figures for the CPS-based civilian labor force and total employment reported on page 7, represent an underestimate of the true values. This possibility is also indicated by the civilian labor force and employment figures for 1978 projected by the Kentucky Quarterly Econometric Model. These projections are made by summing the individually predicted components of employment and unemployment and then making an explicit adjustment for *net employment-out-of-state*.

Footnotes

¹See Charles G. Renfro and Paul A. Coomes, *Kentucky Economic Information System User Manual*, Lexington, Ky.: Office for Research, College of Business and Economics, University of Kentucky, 1977. Section 2.4, for a detailed description of Employment and Unemployment Concepts and the several data collection programs.

²See Brian Motley, "The Unemployment Rate as an Economic Indicator at the State and Local Levels," *Kentucky Council of Economic Advisors Policy Paper Series, No. 3*, Lexington, Ky.: Kentucky Council of Economic Advisors, September 1977.

³See also the earlier report on this development in Lawrence K. Lynch, "Kentucky Economic Outlook," *Kentucky Economy: Review and Perspective*, June 1979, pp. 3-4.

Kentucky Economy: Review & Perspective
Kentucky Council of Economic Advisors
451 Commerce Building 00341
University of Kentucky
Lexington, Kentucky 40506

U.S. Postage
PAID
Non-Profit Org.
Permit No. 51
Lexington, Ky.

Jeanne Long
Congressional Information Service
7101 Wisconsin Avenue
Washington, D.C. 20014

DATED MATERIAL
PLEASE RUSH

KENTUCKY ECONOMY

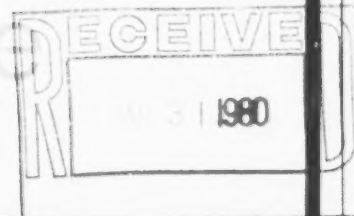
December 1979

Vol. 3 No. 4

Review & Perspective

THE KENTUCKY COUNCIL OF ECONOMIC ADVISORS

University of Kentucky, Lexington, Kentucky 40506



KCEA Review and Forecast

By Charles W. Hultman*

Although the recession predicted by many economists for the U.S. economy has thus far failed to materialize, it seems clear that a "leveling off" has occurred and that a downswing has simply been postponed for a time. Third quarter real GNP increased about 3.5 percent following the slight decline during the second quarter 1979. A recession—loosely defined as two successive quarters of declining GNP—is now projected by most national forecasting services to occur during the fourth quarter 1979 and the first part of 1980; however, gains would gradually occur throughout the remainder of 1980 and 1981.

A key element in the projections for 1980 and 1981 relates to the expected rate of inflation and governmental response through changes in credit conditions. The availability of credit and high mortgage rates has already affected the construction industry; the domestic auto industry is also in a weak position.

The Wharton Econometric Forecasting Associates, Inc. forecast of October 30, 1979 that is used as a basis for this forecast suggests a slight decline in national employment in agriculture, durable and nondurable manufacturing in 1980 as compared with 1979. New car sales are expected to decline slightly in 1980, but to increase significantly in 1981; a greater decrease is likely to occur in 1980 in the purchase of recreational vehicles and trucks. The Wharton forecast also suggests a decline of almost 8 percent in residential investment.

Other economic variables of key interest include the unemployment rate, which is expected to rise from slightly less than 6 percent in 1979 to somewhat above 7 percent for 1980. As measured by the Consumer Price Index for all Urban Consumers, the inflation rate is projected to abate only slightly, from about 11.2 percent in 1979 to about 10.5 percent in 1980.

During the past year, the Kentucky economy has continued to grow, although the unemployment rate has ranged from 5 to 6 percent in recent months. Employment gains have occurred between the third quarters of 1978 and 1979 in such industries as Transportation, Communications, and Public Utilities; Wholesale and Retail Trade; Finance, Insurance and Real Estate; Services; and State and Local Government, as

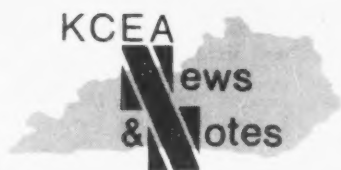
well as in coal mining. Slight employment declines have occurred in durable and nondurable manufacturing and in contract construction.

State industry sectors that are most likely to experience employment declines during the coming years are coal mining, contract construction and motor vehicle transportation equipment related industries. Developments in coal mining depend to a great extent on federal government policies and action; many coal-producing areas of the state have not been able to sell all the amounts of coal they have on hand, or could readily extract. However, a strong commitment and appropriate action by the federal government could lead to employment gains in coal mining and related industries.

Recent reports concerning the value of Construction Contracts and Permit Authorized Construction of One-Family Residential Units (see Selected Indicators) suggest that difficulties may be experienced in the construction sector in the state. This is also suggested by the Kentucky Quarterly Econometric Model forecast of November 5, 1979 shown on pages 3-5 of this issue of *Review and Perspective*. The model projects a 12 thousand decline in employment in this sector in 1980. Employment decreases are also projected for manufacturing and wholesale and retail trade. However, Kentucky's Personal Income is projected to continue to expand by about 9 percent in current dollars in 1980; in real terms, the growth may be almost insignificant. Total employment will decline somewhat in 1980 but increase in 1981; the unemployment rate will also increase slightly in 1980.

In summary, the strength reflected in third quarter 1979 GNP is not expected to continue and the country may experience a mild recession in late 1979 and early 1980. Kentuckians can expect continued inflation, high interest rates, and, in all likelihood, growing unemployment in the contract construction industry, wholesale and retail trade, and in those firms providing components or a service to the motor vehicle transportation equipment industry.

**Charles W. Hultman is the Associate Dean of the Office for Research, College of Business and Economics, University of Kentucky, and Chairman of the KCEA.*



With his appointment as Governor Brown's Secretary of the Development Cabinet, Larry Townsend has joined the Kentucky Council of Economic Advisors as an *ex-officio* member. A graduate of the University of Louisville, Mr. Townsend has wide-ranging experience in both business and government. In 1975-76 he served as Kentucky's Commerce Commissioner and during that time was Secretary to the Governor's Economic Development Commission. We welcome Mr. Townsend to membership on the Kentucky Council of Economic Advisors and look forward to his participation.

* * *

KENTUCKY ECONOMY Review & Perspective

Published by the
Kentucky Council of Economic Advisors
451 Commerce Building
University of Kentucky
Lexington, Kentucky 40506
(606) 258-4626

Charles G. Renfro, Acting Executive Director
Margaret O'Neill Adams, Editor

The *Kentucky Economy: Review and Perspective* is paid for with state funds and published by the Kentucky Council of Economic Advisors (KCEA) Research Staff. The KCEA is a state government agency, staff support for which is provided by the Center for Applied Economic Research, a unit of the Office for Research, College of Business and Economics, University of Kentucky.

This quarterly publication is intended, primarily, to provide forecasts and current information concerning the Kentucky economy. More generally it provides a forum for the publication of short, expository articles dealing with current research or information systems, the focus of which is some aspect of the Kentucky economy.

Articles submitted for publication should be sent to the Editor at the address given above. All submissions will be reviewed independently by persons recognized as knowledgeable in the specific subject discussed. However, the ultimate responsibility for content rests with the author.

Materials appearing in this publication may be reproduced without permission, although credit to the source is appreciated.

Subscriptions to *Kentucky Economy: Review and Perspective* are available, without cost, upon request. Please inform us if you receive multiple copies or if you wish to discontinue your subscription.

During the third quarter of 1979 several more training sessions in the use of the Frankfort version of the Kentucky Economic Information System (KEIS) were held. Those who participated were from the Departments of Commerce, Energy, and Local Government. In addition, the capabilities of the KEIS were demonstrated in the form of testimony before the Legislative Research Commission's Special Subcommittee on a Statewide Information System in September. Demonstrations of the KEIS were also scheduled for the Area Development District directors and their staffs to coincide with the monthly ADD directors' meeting in September.

The KEIS/Frankfort has been revised and updated several times during the past quarter in an attempt to assure that Frankfort users of the KEIS have the most current data and software available to them. State agency personnel who wish to schedule a KEIS/Frankfort training session, or who have any questions about the KEIS/Frankfort, should contact Margaret Adams, Manager, Kentucky Economic Information System, (606) 258-4626.

* * *

In late September the Regional Economic Information System of the Bureau of Economic Analysis (U.S. Department of Commerce) released preliminary annual estimates of Kentucky personal income, by source, for 1978. At this time BEA also revised the estimates for these same data for 1973-77. All of these data are now available in the Kentucky Economic Information System. A summary Kentucky personal income table, 1977-78, is included in this issue of *Review and Perspective*, p. 12.

Upon receipt of the 1978 personal income data, final work was done on this year's *Kentucky Personal Income Report*. It includes state and national data for 1977 and 1978 and county and Area Development District data for 1976 and 1977. The county-level data were released by BEA in April 1979. The *Kentucky Personal Income Report*, a publication cooperatively produced by the KCEA and the Kentucky Department of Commerce, will be available during the first quarter, 1980.

* * *

On October 18, 1979, Professor Lawrence K. Lynch, Transylvania University, presented his projections for the future economic growth of Kentucky to a meeting of representatives from a number of state agencies. This forecast is the product of a study undertaken by Professor Lynch and Claud F. Porter and is an up-to-date assessment of the economic outlook for Kentucky for the remainder of this century. These projections are incorporated in "The Long-Term Growth of the Kentucky Economy, 1979 Update" by Lynch and Porter, published as the first in the series, *KCEA Studies in Applied Economic Research* (January 1980). Single copies of this paper are available upon request.

* * *

(continued on p. 11)

Kentucky Econometric Model Forecast

By Charles G. Renfro*

This forecast for Kentucky is based upon an assumed two quarter decline in real GNP, the fourth quarter of 1979 and the first quarter of 1980. The forecast assumptions include predictions of the values of national economic variables taken from the October 30, 1979 *Pre-Meeting Control Forecast* made by the Wharton Econometric Forecasting Associates, using the Wharton Quarterly Econometric Model of the United States.

The likely impact on Kentucky of the projected two quarter real GNP decline, assumed by Wharton to be due in part to the new Federal Reserve Board monetary policies, is shown in tables on this page and pages 4 and 5 to include a four quarter decline in nonagricultural wage and salary employment, beginning in the fourth quarter of 1979. In late 1980, a recovery in employment is projected to begin; however, year-to-year, from 1979 to 1980, there is a net decline. In contrast, aggregate personal income continues to increase throughout the forecast period, but since the rate of inflation in both 1979 and 1980 may exceed 10 percent, the real income increase implied is negligible; in 1980, there could be a decline in real income.

The purpose of this forecast is simply to indicate the effect on Kentucky if the October 30 Wharton national forecast were to be realized. A more detailed assessment of the economic outlook is provided in the 1980 KCEA *Annual Report*, due to be published in January 1980. It is important to note also that all the figures that are shown for 1979 are *forecasts*. Only for certain months and quarters of 1979 have estimates so far been published; these can be retrieved from the Ken-

tucky Economic Information System data banks. See also the "Technical Note" on page 12 of the September 1979 issue of *Review and Perspective*.

*Charles G. Renfro is Acting Executive Director of KCEA.

ANNUAL SUMMARY TABLE
SELECTED ECONOMIC INDICATORS

Description	1979	1980	1981
Personal Income (Millions)	26215.4	28519.2	31753.2
% Chg.: Ky. Personal Income	13.34	8.79	11.34
Wage and Salary Disbursement	15876.1	17092.0	19225.0
Mfg. Wage & Salaries	4639.6	4956.2	5724.1
Non-Mfg. Wage & Salaries	11236.5	12135.8	13500.8
Non-Agri. Wage & Salary Empl.	1259.7	1237.7	1270.9
% Chg.: Ky. Non-Ag. Empl.	2.27	-1.75	2.69
Manufacturing Employment	292.2	285.5	302.9
Durable Goods	167.5	163.0	178.6
Non-Durable Goods	124.7	122.5	124.3
Non-Mfg., Non-Agri. Empl.	967.4	952.1	968.0
Civilian Labor Force	1622.9	1618.8	1670.6
Ky. Unemployment Rate (%)	5.7	6.2	6.2

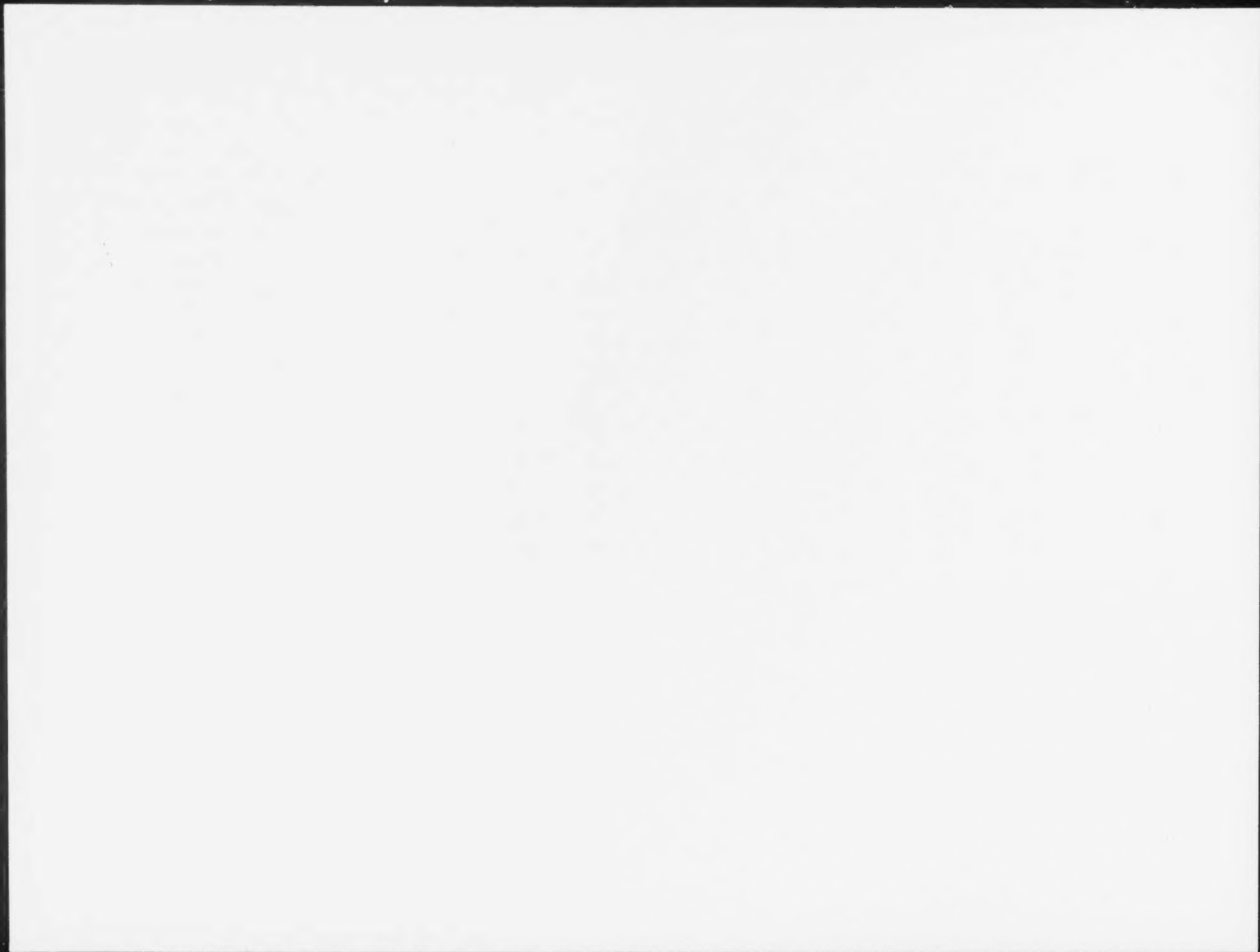
Forecast Date: November 5, 1979.

QUARTERLY FORECAST TABLE
SELECTED ECONOMIC INDICATORS

Description	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4
Personal Income (Millions)	27733.3	28097.0	28759.1	29487.3	30205.9	31232.3	32343.2	33231.4
% Chg.: Ky. Personal Income	9.28	5.35	9.76	10.52	10.11	14.30	15.00	11.44
Wage and Salary Disbursement	16726.4	16885.1	17140.9	17615.6	18211.6	18921.4	19585.2	20181.6
Mfg. Wage & Salaries	4943.1	4906.3	4893.4	5082.0	5417.0	5639.2	5847.6	5992.6
Non-Mfg. Wage & Salaries	11783.3	11978.8	12247.5	12533.6	12794.5	13282.2	13737.6	14189.0
Non-Agri. Wage & Salary Empl.	1243.0	1237.0	1234.9	1235.8	1247.5	1264.3	1280.6	1291.3
% Chg.: Ky. Non-Ag. Empl.	-2.00	-1.92	-0.68	0.31	3.82	5.51	5.25	3.40
Manufacturing Employment	287.7	285.1	283.7	285.6	293.5	300.2	306.7	311.3
Durable Goods	163.9	162.5	161.8	164.0	171.4	176.9	181.5	184.6
Non-Durable Goods	123.8	122.6	121.9	121.7	122.1	123.3	125.2	126.7
Non-Mfg., Non-Agri. Empl.	955.3	951.9	951.2	950.2	954.0	964.1	973.9	980.1
Civilian Labor Force	1617.6	1615.5	1618.0	1624.1	1640.8	1663.5	1682.6	1695.3
Ky. Unemployment Rate (%)	6.1	6.3	6.4	6.5	6.4	6.3	6.2	6.0

Forecast Date: November 5, 1979.





selected indicators OF ECONOMIC ACTIVITY

These tables of selected indicators of economic activity were prepared by a special-purpose program of the Kentucky Economic Information System. The data in the tables are reported figures which were obtained from a variety of state and federal agencies, as well as from private firms.

Jul. 1979	Aug. 1979	Sept. 1979	Qtr. III 1979	% Chg. 79-II 79-III	% Chg. 78-III 79-III
--------------	--------------	---------------	------------------	---------------------------	----------------------------

UNITED STATES DATA

CONSUMER PRICE INDEX: 1967=100

CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1

CONSUMER PRICE INDEX: 1967=100

CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1
CONSUMER PRICE INDEX: ALL URBAN CONSUMERS (EXCL. HOUSING, FOOD AND ENERGY)	220.09	221.89	223.49	221.13	3.86	0.1

LABOR FORCE: 1967=100

LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0
LABOR FORCE: 1967=100	100.00	100.00	100.00	100.00	0.00	0.0

Source: Bureau of Economic Analysis, Department of Commerce, Washington, D.C.

KENTUCKY DATA

LABOR FORCE (000 PERSONS)

LABOR FORCE, TOTAL CIVILIAN	1558.09	1585.89	1613.49	1585.79	3.89	-0.20
UNEMPLOYMENT RATE (NOT SEASONALLY ADJUSTED)	5.59	5.69	5.29	5.55	21.44	6.62
EMPLOYMENT, TOTAL, BY PLACE OF RESIDENCE (INCL. PERSONS ON STRIKE)	1470.50	1494.89	1527.79	1497.73	2.82	-0.56
EMPLOYMENT, AGRICULTURAL	74.79	85.50	90.69	83.66	14.24	-2.33
EMPLOYMENT, TOTAL NON-AGRICULTURAL WAGE AND SALARY	1264.29	1268.79	1267.19	1273.43	-0.46	2.03
EMPLOYMENT, BITUMINOUS COAL & LIGNITE MINING (SIC 12)	54.29	54.00	54.79	54.36	0.49	2.57
EMPLOYMENT, CONTRACT CONSTRUCTION	76.69	78.19	75.69	76.86	6.07	-1.99
EMPLOYMENT, TOTAL MANUFACTURING	289.89	287.29	288.19	288.46	-1.94	-0.64
EMPLOYMENT, MANUFACTURING, DURABLE	166.00	164.00	165.29	165.09	-2.92	-0.70
EMPLOYMENT, MANUFACTURING, NON-DURABLE	123.89	123.29	122.89	123.36	-0.61	-0.56
EMPLOYMENT, TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES	70.00	70.29	69.79	70.03	0.67	2.03
EMPLOYMENT, WHOLESALE & RETAIL TRADE	283.09	281.39	287.59	284.03	1.19	5.70
EMPLOYMENT, FINANCE, INSURANCE & REAL ESTATE (SIC 60-67)	51.19	50.79	50.50	50.83	0.59	3.24
EMPLOYMENT, SERVICES (SIC 70-80)	208.39	211.89	212.09	210.79	-0.29	3.53
EMPLOYMENT, CIVILIAN GOVERNMENT	225.69	229.89	243.79	233.13	-3.50	1.15
EMPLOYMENT, STATE & LOCAL GOVERNMENT	184.69	189.29	203.09	191.33	-4.96	0.68

	Jul. 1979	Aug. 1979	Sept. 1979	Qtr. III 1979	% Chg. 79-II 79-III	% Chg. 78-III 79-III
HOURS AND EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING						
AVG WEEKLY HOURS, PROD WORKERS, TOTAL MANUFACTURING	39.00	39.00	39.29	39.09	-0.00	-0.59
AVG WEEKLY HOURS, PROD WORKERS, MANUFACTURING DURABLES	39.79	39.59	40.00	39.29	0.42	-0.50
AVG WEEKLY HOURS, PROD WORKERS, NON-DURABLE MANUFACTURING	37.89	38.19	38.50	38.19	-0.69	-0.43
AVG HOURLY EARN, PROD WORKERS, TOTAL MANUFACTURING	6.75	6.85	6.94	6.85	1.40	0.95
AVG HOURLY EARN, PROD WORKERS, MANUFACTURING DURABLES	7.11	7.28	7.39	7.26	2.92	12.30
AVG HOURLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	6.23	6.29	6.43	6.29	-0.60	-4.36
AVG WEEKLY EARN, PROD WORKERS, TOTAL MANUFACTURING	261.64	267.53	273.13	268.10	1.39	8.30
AVG WEEKLY EARN, PROD WORKERS, MANUFACTURING DURABLES	281.37	288.67	296.00	289.35	3.45	11.64
AVG WEEKLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	230.00	219.89	244.08	240.66	-1.30	3.91
INDEX OF PRICES RECEIVED BY KY FARMERS (1972=100)						
INDEX OF PRICES REC'D BY KY FARMERS, CROP AND LIVESTOCK PRODUCTS	164.93	163.74	165.61	163.73	3.41	12.88
INDEX OF PRICES REC'D BY KY FARMERS, LIVESTOCK PRODUCTS	179.10	168.69	181.14	176.34	-7.87	20.19
INDEX OF PRICES REC'D BY KY FARMERS, CROPS	155.95	155.74	156.70	155.79	-0.02	0.15
MINING (MILLIONS OF TONS, MILLIONS OF DOLLARS)						
PHYSICAL OUTPUT OF COAL, EASTERN KENTUCKY - NOT SEAS ADJUSTED	5,260	5,260	5,498	23.09	-6.99	5.93
PHYSICAL OUTPUT OF COAL, WESTERN KENTUCKY - NOT SEAS ADJUSTED	5,031	5,031	5,744	11.64	-6.99	8.86
AVG HOURLY EARN, PROD WORKERS, BITUMINOUS COAL AND LIGNITE MINING	18.24	18.19	18.73	18.85	-0.82	9.81
AVG WEEKLY EARN, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	350.80	350.11	417.79	400.44	14.35	4.10
AVG WEEKLY HOURS, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	14.78	14.88	14.89	14.86	-0.02	-0.02
TAX RECEIPTS, COAL SEVERANCE, CONSOLIDATED TOTAL	11.31	11.44	14.62	39.34	*	-4.42
CONSTRUCTION (MILLIONS OF \$, NO. OF PRIVATE RESID. UNITS - NOT SEAS ADJ)						
VALUE OF CONSTRUCTION CONTRACTS, RESIDENTIAL & NON-RES	256.93	254.09	166.95	578.16	41.56	52.35
PERMIT AUTHORIZED CONSTRUCTION, NO. OF 1-FAMILY RESID. UNITS	764.00	877.00	708.00	2349.00	-20.64	14.73
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, 1-FAMILY RESID. UNITS	30.50	36.07	30.31	96.89	16.99	-4.92
PERMIT AUTHORIZED CONSTRUCTION, NO. OF RESID. UNITS, TOTAL	1119.00	1312.00	1563.00	3994.00	-0.96	32.69
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, ALL UNITS, TOTAL	37.57	43.71	49.25	130.54	-7.26	-2.78
ELECTRIC POWER SALES (MIL KWH)						
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST, INC. DOE	2825.90	2905.79	2843.44	8575.14	-11.89	-9.67
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST, EX.DOE	2172.45	2216.39	2154.50	6548.34	5.05	1.30
ELECTRICITY SALES, KWH, TO DEPARTMENT OF ENERGY	648.44	689.40	688.94	2026.79	-42.09	-33.09
RETAIL SALES (000\$, 000 CARS)						
TAX RECEIPTS, GENERAL FUND, SALES AND GROSS RECEIPTS TAXES	53.34	55.05	39.20	147.60	*	-6.75
NEW PASSENGER CAR REGISTRATIONS, TOTAL, NOT SEAS. ADJ.	8.04	10.15	11.45	29.65	-33.58	-56.57
FINANCE AND INSURANCE (MILLIONS OF DOLLARS)						
NET LOANS MADE & ACQUIRED BY KY. SAVINGS & LOAN ASSOCIATIONS	69.38	73.36	58.87	201.62	-0.06	-1.43
SALES OF ORDINARY LIFE INSURANCE	341.01	358.48	328.31	1027.71	-4.08	9.20
SELECTED STATE GOVERNMENT RECEIPTS (000 \$)						
TAX AND NON-TAX RECEIPTS, GENERAL FUND, TOTAL	93.24	154.89	108.52	356.66	*	0.29
TAX RECEIPTS, GENERAL FUND, SALES AND USE TAXES, TOTAL	49.58	50.94	34.68	135.22	*	-7.24
TAX RECEIPTS, GENERAL FUND, INCOME TAX, INDIVIDUAL	10.13	75.06	22.62	107.83	*	-5.89
TAX RECEIPTS, GENERAL FUND, INCOME TAX, CORPORATION	6.50	4.50	22.03	33.04	*	-11.03
TAX RECEIPTS, STATE ROAD FUND, STATE SHARE	20.64	36.03	18.16	74.84	*	-25.93
TAX RECEIPTS, STATE ROAD FUND, MOTOR FUELS NORMAL, TOTAL	10.18	23.50	9.10	42.87	*	-18.35
TAX RECEIPTS, STATE ROAD FUND, MOTOR VEHICLE USAGE TAX	8.61	10.70	7.86	27.17	*	-8.03

* = QUARTER TO QUARTER COMPARISONS NOT MEANINGFUL DUE TO SEASONAL VARIATION
NA = NOT AVAILABLE AT PUBLICATION TIME

Can We Afford to Simplify the Kentucky Income Tax?

By Don M. Soule*

Two studies concerning simplification of the Kentucky income tax were prepared recently for the Kentucky Legislative Research Commission¹ in anticipation of this being among the major issues before the 1980 Kentucky General Assembly. This brief article, based upon the LRC studies, summarizes the problems of tax simplification and suggests some solutions.

The current Kentucky income tax is criticized on three levels. First, there is needless complication in taxpayer compliance and governmental administration merely because the Kentucky tax has become so different from the federal tax. The Kentucky income tax laws, adopted in 1936, have remained virtually unchanged, while the federal tax laws have been repeatedly revised. Differences in definitions and rules between the two taxes complicate the issue. For example, the Kentucky standard deduction is much smaller than that of the federal tax, causing many low-income households to be burdened in at least two ways. They must file tax returns and pay Kentucky tax even though they are too poor to pay any federal tax. Others itemize deductions in computing their Kentucky tax, a somewhat involved task, while taking the larger standard deduction for federal tax.

A second major criticism of the Kentucky income tax is that it distributes the tax burden unfairly. The federal tax is a more progressive tax, resulting in a reduced federal tax burden for some household types. The federal tax rates range from 14 percent to 70 percent of net taxable income, a ratio of one to five, while the Kentucky tax rates range from 2 percent to 6 percent, a ratio of one to three. Also, the Kentucky rate schedule's highest bracket is for income of "\$8,000 and over," while the top federal brackets are "\$100,000 and over" for an individual taxpayer and "\$200,000 and over" for a married couple. Compounding the problem is the deduction of federal tax in computing the state tax. This feature not only further reduces the degree of Kentucky tax progression but also allows a needless loss of revenue to the federal treasury without an equal reduction in tax burdens on Kentuckians.

Another aspect of the charge of unfairness is that the Kentucky tax does not allow income-splitting for married couples, or similar tax advantages for unmarried heads of households, as does the federal tax. Thus the Kentucky tax burden on married couples and unmarried heads of households appears relatively too large. Also, federal tax regulations, but not those of Kentucky, allow loss carry-overs for unincorporated businesses and the taxation of small corporations as if they were partnerships. If one agrees with the widely-accepted principle that income taxes should reflect individual differences in taxpaying ability, the absence of loss carry-overs in Kentucky income taxation is difficult to justify.

The third level of criticism of the Kentucky income tax structure is the absence of change in the Kentucky tax law. This has caused an exaggerated growth in revenue yield and the development in state government of a dependency upon

this ever-increasing revenue. During the years since 1936, the various dollar amounts in the Kentucky income tax regulations have remained basically unchanged while Kentucky money incomes, on the average, have increased greatly. This has moved the average household income into the highest tax bracket and has also caused relative shrinkage of the standard deduction and the personal credit. Consequently, income tax yields and income tax burdens have increased at a greater rate than money incomes. Relative to the federal income tax, the Kentucky tax yield has grown from 8.5 percent of the federal yield from Kentucky residents in 1961, to over 17 percent in 1976 and 1977 (see Table 1).

The exaggeration of growth in revenue yield can be viewed with concern for at least two reasons. Some say that Kentucky taxpayers have been taxed too greatly.² Others point out that Kentucky state government has too easily relied upon the exaggerated yield from an unchanged Kentucky income tax law to compensate for the lagging revenue growth, during an inflationary period, from the other types of taxes. For example, the gasoline tax (9 cents per gallon) and the motor vehicle license tax (\$12.50 per vehicle) do not automatically produce more revenue when prices rise, and the property tax is limited in several ways to retard its revenue growth during inflation.

Proposals for income tax simplification are responses to these criticisms. Two plans are discussed here. In Plan A, the Kentucky tax is computed as a percentage of the taxpayer's federal tax; with Plan B, the taxpayer applies a Kentucky rate schedule to his federal taxable income. Both plans would bring a very high degree of simplification for most Kentuckians. With either plan, however, there would still be need to adjust for the differences in income which is taxable for federal purposes as compared to income which is taxable by the state government. As an example, federal laws prohibit states from taxing federal bond interest, although it allows federal taxation of this income. An adjustment in federal taxable income would therefore have to be made by the taxpayer who has this type of income in order to obtain his state taxable income. There are several other similar adjustments. Nevertheless, most Kentuckians do not have income which is treated differently by the state and federal governments and they therefore would not be affected by this additional complexity in a more simplified tax plan.

It is assumed that everyone favors tax simplification. Some effects of tax simplification, however, are not universally regarded as advantages. Plan A would cause the Kentucky tax burden to be distributed almost identically as the federal tax burden. Lower income households would pay less Kentucky tax and higher income households would pay more than they

**Don M. Soule is a Professor of Economics, University of Kentucky. He received the 1979 Kentucky Economic Association award of a lifetime membership in honor of his contributions to the study of the economy of Kentucky.*

TABLE I
KENTUCKY AND FEDERAL INCOME TAX REVENUE COLLECTED
FROM KENTUCKY RESIDENTS, TAX YEARS 1961-77

Tax Year	Federal Tax Revenue (millions of dollars)	Kentucky Tax Revenue (millions of dollars)	Kentucky as Percent of Federal
1961	402	34.1	8.5
1962	451	37.2	8.2
1963	472	42.0	8.9
1964	468	51.1	10.9
1965	490	60.0	12.2
1966	585	69.2	11.8
1967	621	80.0	12.9
1968	766	92.6	12.1
1969	930	106.0	11.4
1970	920	118.8	12.9
1971	955	138.6	14.5
1972	1,095	161.6	14.8
1973	1,198	195.7	16.3
1974	1,540	228.6	14.8
1975	1,519	253.2	16.7
1976	1,686	293.0	17.4
1977	1,991p	342.3	17.2
1978	NA	NA	NA

Note: p = preliminary, NA = not available.

SOURCE: Federal tax revenue data from *Statistics of Income - Individual Income Tax Returns*, published by U.S. Internal Revenue Service, various years; and Kentucky tax revenue data from *Annual Report of the Kentucky Department of Revenue*, various years.

do presently. Many low income households would be excluded from the tax rolls altogether. Plan A would also bring tax reductions to married couples whose total income is not derived in equal parts from both partners, and to unmarried heads of households. Likewise, tax increases would result for single persons and for equal-earning married couples.

Some may regard the federal tax burden distribution as more fair and would therefore regard Plan A as a desirable means of simplifying the Kentucky tax. Others may wish to achieve a different distribution of tax burden for Kentuckians. Plan B is designed to allow such a difference by applying a Kentucky rate schedule to federal taxable net income. The main purpose is to achieve tax burden distributions that are different from those produced by Plan A, either as to degree of progression or tax treatment among household types, or both. A determination of whether Plan A or Plan B is superior is, of course, dependent upon the desired results from tax simplification. Both plans would bring much simplification, both would change the distribution of tax burdens, and perhaps most noteworthy, both could have significant effects upon revenue yield.

To understand further the effects of the plans discussed here, the effects upon Kentucky income tax revenue yield are examined. As indicated earlier, the Kentucky revenue was 8.5 percent of the federal yield from Kentuckians in 1961. If Plan A had been adopted in 1961, with a tax rate of 8.5 percent of the federal tax, the Kentucky income tax revenue would have been \$169.2 million instead of the actual 1977 yield of \$342.3 million. These differences illustrate the exaggerated growth in

Kentucky income tax revenue. Of course, revenue loss would be shown to be less, over the years, if Plan A were assumed to have been adopted in later years and at higher percentages of the federal tax. But there would be a loss of revenue growth generally over the years.

Plan B is related to the federal tax only in the sense that Kentucky rate schedules would be applied to federal taxable net income. Consequently, the Kentucky tax revenue under Plan B would suffer lag in growth only from changes in the definition of federal taxable net income, whereas the revenue lag in Plan A would result from these changes, as well as from federal rate reductions. With either plan, however, the revenue dilemma is clear.

If either Plan A or Plan B is adopted for Kentucky income tax simplification, there are three choices for resolving the revenue dilemma: a) adjust the Kentucky tax rates (usually upward) every one or two year period, b) allow the state government to experience lag in expenditure growth, or c) raise additional tax revenue from other sources.

It is important to emphasize the reason why these choices seem to be necessary. Price increases, as in a long period of inflation, have the effect of increasing the costs incurred by government if it would continue to provide only the same amounts, types, and quality of services. Some tax types do not increase in revenue yield despite inflation. Therefore the Kentucky state government has relied upon the ever-growing income tax revenues, plus new tax sources such as the coal severance tax and higher rates of sales tax to finance government services. To change the income tax structure without

TABLE 2
POSSIBLE RATE SCHEDULES FOR KENTUCKY INCOME TAX—PLAN B

Schedule Y-2 Single Person, and Married Taxpayer Separate Return					Schedule Y-1 Married Taxpayer Joint Return					Schedule Z Unmarried Head of Household				
Federal Taxable Net Income (thousands of dollars)*		Tax Amounts			Federal Taxable Net Income (thousands of dollars)*		Tax Amounts			Federal Taxable Net Income (thousands of dollars)*		Tax Amounts		
	Tax Rate	Full Bracket	Sum			Tax Rate	Full Bracket	Sum			Tax Rate	Full Bracket	Sum	
0 & Under	2	2%	\$ 40	\$ 40	0 & Under	4	2%	\$ 80	\$ 80	0 & Under	3	2%	\$ 60	\$ 60
2	4	3	60	100	4	8	3	120	200	3	6	3	90	150
4	6	4	80	180	8	12	4	160	360	6	9	4	120	270
6	8	5	100	280	12	16	5	200	560	9	12	5	150	420
8	10	6	120	400	16	20	6	240	800	12	15	6	180	600
10	12	7	140	540	20	24	7	280	1,080	15	18	7	210	810
12	14	8	160	700	24	28	8	320	1,400	18	21	8	240	1,050
14	16	9	180	880	28	32	9	360	1,760	21	24	9	270	1,320
16	20	10	400	1,280	32	40	10	800	2,560	24	30	10	60	1,920
20	24	11	440	1,720	40	48	11	880	3,440	30	36	11	660	2,580
24	28	12	480	2,200	48	56	12	960	4,400	36	42	12	720	3,300
28	34	13	780	2,980	56	68	13	1,560	5,960	42	51	13	1,170	4,470
34	40	14	840	3,820	68	80	14	1,680	7,640	51	60	14	1,260	5,730
40 & Over	15	—	—	—	80 & Over	15	—	—	—	60 & Over	15	—	—	—

*Federal taxable net income is federal adjusted gross incomes less the sum of the personal exemptions and deductions (standard or itemized).

changing other taxes would likely cause lagging growth in total Kentucky tax revenue.

Of the three choices mentioned above, periodic adjustment of the tax rates is the most likely policy to be followed if it is desired that exaggerated revenue growth should continue. Tax rate adjustments will be a transition problem for the first budget year if Kentucky changes to either Plan A or Plan B, and likely will be a continuing problem.

What would be the suggested Plan A tax rate if tax year 1980 is the assumed first year under a revised Kentucky income tax law? The historic experience in Kentucky revenue yield relative to the federal tax, the indefinite nature of the current and future economic situation, the possibility that tax revision might include tax exemptions, and the need to leave margin for further adjustments, most easily made in a down-

ward direction—these combine to suggest that the rate would need to be above 20 percent of the federal tax paid by Kentuckians.

Three rate schedules are suggested for Kentucky under Plan B, with rates ranging from 2 percent to 15 percent (see Table 2). The basic schedule (Y-2) was designed by extending the present Kentucky rate schedule upward from the present top bracket of "\$8,000 and over" with a tax of 6 percent, to a top bracket of "\$40,000 and over" with a tax of 14 percent. But, this basic schedule would apply only to single persons or to married taxpayers filing separate returns. Schedule Y-1 and Schedule Z, also shown in Table 2, have been designed for married couples and for unmarried heads of households, respectively. A comparison is presented in Table 3 of the tax amounts for Plan B with those for Plan A with 20 percent

TABLE 3
KENTUCKY TAX AMOUNTS UNDER ALTERNATE PLANS: PRESENT (1978) TAX:
PLAN B: PLAN A AT 20 PERCENT RATE AND AT 25 PERCENT RATE
(Household 2—Family of Four: Wife's Income One-Third of Total;
All Wage Income)

	Federal Adjusted Gross Income	Amount of Kentucky Tax				Differences from 1978 Tax		
		1978 Tax	Plan B Y-1	Plan A 20%	Plan A 25%	Plan B Y-1	Plan A 20%	Plan A 25%
A	\$ 7,500	63	26	0	0	-37	-63	-63
B	15,000	232	224	269	336	-8	+37	+104
C	22,500	435	440	495	618	+5	+60	+183
D	30,000	692	800	839	1,048	+108	+149	+356
E	45,000	1,194	1,810	1,736	2,170	+616	+542	+976
F	60,000	1,635	3,126	2,891	3,614	+1,491	+1,256	+1,979
G	90,000	2,421	6,268	5,530	6,913	+3,847	+3,109	+4,492

SOURCE: Don M. Soule, "Two Plans for Integrating the Kentucky and Federal Income Taxes: Implications for Tax Burdens, Revenue Yield, and Simplification," study for Kentucky Legislative Research Commission, November 1979.

and 25 percent rates. The present Kentucky tax is also shown in Table 3. The indicated tax increases are, of course, overstated because no adjustments were made for the offsetting reduction in federal income tax.

Because the suggested rate schedules for Plan B likely will not yield adequate revenue for 1980 and later years, several possible adjustments are considered. The rate schedules could be remodeled, using larger percentage rates or narrower brackets, or a surtax could be added to the suggested rate schedules. In using a surtax, the Kentucky tax would be computed according to the usual method but the amount of tax liability would be increased by a surtax percent.

Summarizing, the two tax simplification plans would produce the traditional exaggeration of revenue growth only if the tax rates are periodically adjusted upward. Under Plan A most households would merely multiply the federal tax amount by the Kentucky rate and thereby determine their Kentucky income tax in one simple computation. If Plan B were adopted, one or more Kentucky tax rate schedules would need to be drawn, with the schedules designed to yield a first year revenue total considered to be adequate. These rate schedules would also need periodically to be adjusted upward. Most households would merely apply the Kentucky rate

schedule, or a tax table, to the amount of taxable net income shown on their federal forms and possibly reduce this tax amount by several tax credits.

With either of the proposed plans, the degree of tax simplification would be great for most households, and quite large even for taxpayers required to file additional adjustment schedules. Potentially the most troublesome aspect of the tax simplification proposals is the likely need to make annual upward adjustments in the tax rates.

Footnotes

¹ Don M. Soule and Stephen E. Lile, "Simplification and Modernization Options for the Kentucky Individual Income Tax," September 1979 and Don M. Soule, "Two Plans for Integrating the Kentucky and Federal Income Taxes: Implications for Tax Burdens, Revenue Yield, and Simplification," November 1979. Professor Soule also spoke on a panel considering "Kentucky Income Tax Simplification," at the meeting of the Kentucky Economic Association, October 26, 1979.

² See a discussion of this issue in the *Council of Economic Advisors Annual Report, 1979*, Development Cabinet, Commonwealth of Kentucky. The *Annual Report* articles include: Stephen E. Lile, "Kentucky Taxes: How Do They Compare?" pp. 61-73; Lawrence K. Lynch, "Kentucky's Economy: How Does It Compare?" pp. 43-59; and Don M. Soule, "Is Kentucky a Low-Tax or a High-Tax State?" pp. 75-79.

KCEA News & Notes

(continued from page 2)

Charles W. Hultman, Chairman of the KCEA, was one of Kentucky's official participants in a conference of the Southern Growth Policies Board in Charlotte, North Carolina (November 12-14, 1979), entitled "Southern Growth in the 1980s." Dr. Hultman also met in November with the Governor's Economic Development Commission to review studies pertaining to statewide banking and to discuss reorganization of the Development Cabinet. Earlier this autumn Dr. Hultman testified before the Kentucky Housing Corporation Subcommittee of the Legislative Research Commission and before a legislative committee to study workmen's compensation.

* * *

Charles G. Renfro, Acting Executive Director of the KCEA, presented a paper on recent developments in state and regional econometric models and the Kentucky Quarterly Econometric Model at the Southeastern Economic Analysis Conference (SEAC), September 20-21, 1979 in Atlanta. At the October

21-24, 1979 meeting of the Association for University Business and Economic Research (AUBER) in San Antonio, Dr. Renfro chaired a session on "Goal Setting and the Research Center" and was a discussant for the session on "Statistical Software and Systems Available through the Federal Government: An Overview," entitling his written comments: "Reflections on a Theme by Mendelsohn: The LABSTAT Data Base System."

Charles Renfro shared the platform with Gary Wenglowski, partner and director of research for Goldman, Sachs and Co., for the session, "The Economic Outlook," at the fifth annual meeting of the Kentucky Economic Association held in Louisville on October 26, 1979. Dr. Renfro returned to Louisville the following week to be the dinner speaker at the annual meeting of the Kentucky Industrial Development Council and spoke on the topic, "The Economic Outlook and Its Effect on Kentucky's Future Industrial Development."

* * *

The October 1979 issue of *Growth and Change*, published quarterly by the College of Business and Economics, University of Kentucky, contains several articles of probable interest for our readers. These include, among others, articles on municipal revenue forecasting, on methods for calculating regional industry impact multipliers, and on factors affecting land-use change at the urban-rural fringe. Subscriptions to *Growth and Change* may be obtained by writing to the Associate Editor at 644 Maxwellton Court, Lexington, Kentucky 40506.

10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

Joanne Long
Communication Information Service
7701 Wisconsin Avenue
N.W. Washington, D.C. 20014

UNCLASSIFIED
PLANES RUSH

KENTUCKY ECONOMY

Review & Perspective

THE KENTUCKY COUNCIL OF ECONOMIC ADVISORS
University of Kentucky, Lexington, Kentucky 40506

March 1980
Vol. 4, No. 1

KCEA Review and Forecast

By Charles W. Hultman*

Although the mild recession projected for 1979 failed to materialize, Gross National Product (GNP) did drop sharply in the second quarter of last year. Furthermore, the strength reflected in the last two quarters that contributed to the annual real growth rate of 2.3 percent in 1979 is expected to diminish as 1980 progresses. The mixture of statistical information continuing to be available indicates the difficulty of forecasting a downturn: the U.S. Commerce Department's revised figures show that real GNP increased at a 2.1 percent annual rate during the fourth quarter of 1979—much higher than the initial 1.4 percent reported. But strong inflationary pressures exhibited in January of 1980 and the decline in the Composite Index of Leading Indicators for the fourth consecutive month suggests the likelihood of at least a mild downturn.

It should be noted that, except for inflationary pressures, the U.S. economy has generally performed reasonably well since the expansionary phase started in late 1975. The expansionary phase itself has been relatively long, real GNP has increased more than 20 percent, and, more recently, over 60 percent of the working-age population has been working. However, inflationary pressures in recent months have become increasingly severe—the worst that have been experienced since the immediate post-World War II period.

The Wharton Quarterly Model (dated January 28, 1980) projects real GNP to decline from 1 to 2 percent during the first two quarters of 1980; a slight gain during the last two quarters would lead to a small overall decline on an annual basis. Whether or not a recession occurs during 1980 remains uncertain; as a minimum, a leveling off in economic activity can be expected.

Inflation will continue to be a problem in 1980. A 13.74 percent projected increase in the Consumer Price Index for 1980 would be somewhat greater than the increase experienced in 1979. The unemployment rate of 5.79 percent in 1979 would continue to rise, reaching 6.9 percent in 1980 and 7.7 percent in 1981. Residential construction and net exports are projected to decline and real consumer durable spending would grow only marginally during the year. The bank prime loan rate is forecast to rise to 13.55 percent in 1980; the personal savings rate, which was about 4.5 percent in 1979, is

expected to remain slightly below 4 percent for the next year or two.

The most recent forecast provided by the Kentucky Quarterly Econometric Model (dated February 15, 1980) is somewhat more pessimistic than the one developed three months ago. Kentucky Personal Income (in money terms) would rise by 8.5 percent in 1980 and an additional 10.0 percent in 1981 from the \$26.238 billion of 1979. A Personal Income gain of this magnitude suggests that per capita real income would increase little, if at all, during the next year or so. Nonagricultural wage and salary employment would decline slightly more than 2 percent in 1980 but rise about 1.25 percent in 1981. The major decline in 1980 would occur in contract construction and the durable goods industries. A mild decline would occur in the regulated industries and in wholesale and retail trade. Employment in the remaining industries, including nondurable manufacturing, government employment and coal mining, would remain about the same in 1980 as in the preceding year.

The Kentucky unemployment rate can be expected to rise more than one-half of a percentage point in 1980, and remain almost unchanged in 1981. Total employment in the state would decline from an estimated 1,514 thousand in 1979 to 1,502 thousand in 1980, but up again in 1981 to 1,531 thousand.

As noted in the last issue of *Review and Perspective*, a key element in the projections for 1980 and 1981 is the rate of inflation and governmental response through changes in credit conditions. The recent decision on the part of the Carter administration to reevaluate the economic situation suggests federal policies may be modified or altered or that new measures may be used to achieve stated goals. In any event, strong inflationary pressures exhibited in January of 1980, along with increasingly tight credit conditions and renewed efforts to reduce the size of the federal budget deficit, suggest that Kentuckians can expect high unemployment rates in some sectors of the state economy along with continued problems with inflation.

**Charles W. Hultman is the Associate Dean of the Office for Research, College of Business and Economics, University of Kentucky, and Chairman of the KCEA.*

KCEA News & Notes

The staff of the Kentucky Council of Economic Advisors continues to conduct training sessions in the use of the Kentucky Economic Information System (KEIS) for state government personnel who wish to use the Frankfort version of the KEIS. In recent months KEIS/Frankfort training sessions were held at the offices of the Secretary of the Department of Finance, the Center for Program Development in the Bureau for Social Insurance and at the Bureau of Child Support Enforcement, both in the Department for Human Resources, and at the Divisions of Research in the Departments of Labor and Transportation. In addition to personnel at these offices, staff from the Kentucky Occupational Information Coordinating Committee and from the Office of Policy and Budget

KENTUCKY ECONOMY: Review & Perspective

Published by the
Kentucky Council of Economic Advisors
451 Commerce Building
University of Kentucky
Lexington, Kentucky 40506
(606) 258-4626

Charles G. Renfro, Acting Executive Director
Margaret O'Neill Adams, Editor

The *Kentucky Economy: Review and Perspective* is paid for with state funds and published by the Kentucky Council of Economic Advisors (KCEA) Research Staff. The KCEA is a state government agency, staff support for which is provided by the Center for Applied Economic Research, a unit of the Office for Research, College of Business and Economics, University of Kentucky.

This quarterly publication is intended, primarily, to provide forecasts and current information concerning the Kentucky economy. More generally it provides a forum for the publication of short, expository articles dealing with current research or information systems, the focus of which is some aspect of the Kentucky economy.

Articles submitted for publication should be sent to the Editor at the address given above. All submissions will be reviewed independently by persons recognized as knowledgeable in the specific subject discussed. However, the ultimate responsibility for content rests with the author.

Materials appearing in this publication may be reproduced without permission, although credit to the source is appreciated.

Subscriptions to *Kentucky Economy: Review and Perspective* are available, without cost, upon request. Please inform us if you receive multiple copies or if you wish to discontinue your subscription.

of the Department for Human Resources participated in the training sessions. Personnel at the Kentuckiana Regional Planning and Development Agency (KIPDA ADD), Louisville, are also among the recent users of the KEIS/Frankfort. State agency personnel who wish to schedule a KEIS/Frankfort training session should contact Margaret Adams, Manager, Kentucky Economic Information System (606) 258-4626.

* * *

Several additions have recently been made to the software of the KEIS/Frankfort. Persons who are logged on to TSO on the state government computing network can access the KEIS Procedure by simply typing KEIS after the TSO READY statement. This replaces the command, EXEC 'CEA.EIS'. Enhancements to the KEIS/Frankfort are described on page 10 of this issue.

* * *

The Kentucky Economic Information System (KEIS) on the Kentucky Educational Computing Network (KECNET) has also been enhanced. Users of the KEIS on KECNET now can have single command access to any of the hundreds of thousands of pieces of information stored in the databases of the KEIS. The command to do this is described in the March issue of the University of Kentucky Computing Center's newsletter, *The Kentucky Register*, in an article by Roy A. Sigafus. For further information about this, please contact Mr. Sigafus (606) 258-4626.

* * *

On January 22, 1980, Dr. Charles G. Renfro, Acting Executive Director of the KCEA, appeared on a panel before the Kentucky Joint Legislative Committee on Appropriations and Revenue. Dr. Renfro discussed the economic outlook for the United States and for Kentucky in the forthcoming biennium. Other panel participants were Dr. Charles Haywood, former Chairman of the KCEA, Dr. Lawrence K. Lynch, former Executive Director of the KCEA, and Richard Sims of the Legislative Research Commission.

* * *

The 1980 KCEA Annual Report is in the final stages of preparation and should be published during the second quarter, 1980. The 1980 KCEA Annual Report contains extensive analyses of the U.S. and Kentucky economies by Dr. Charles Renfro, as well as his detailed quarterly forecasts for the coming two years. Dr. Renfro was one of the economic forecasters who did not forecast a recession for 1979 and his articles in the *Annual Report* consider this issue and project sluggish performance of the national economy, but no recession for 1980; he also considers the possibility that government policies yet to be implemented could precipitate a recession. He also includes the forecast of the U.S. economy released recently by Wharton Econometric Forecasting Associates, who forecast two quarters of decline in real Gross National Product in 1980, followed by a slow recovery.

(continued on page 11)

Kentucky Econometric Model Forecast

By Charles G. Renfro*

This forecast for Kentucky is based upon the assumption of a two quarter decline in real GNP in the first half of 1980, followed by a sluggish recovery in which federal defense expenditures represent the principal area of rapid growth. The forecast assumptions include predictions of the values of national economic variables taken from the January 28, 1980 *Pre-Meeting Control Forecast* made by Wharton Econometric Forecasting Associates, using the Wharton Quarterly Econometric Model of the United States.

The national forecast is based upon the presumption of continued tight monetary policies and no tax cut in 1980. The likely impact on Kentucky of this national scenario is shown in tables on this page and pages 4 and 5 to include a four quarter decline in Kentucky nonagricultural wage and salary employment, beginning in the first quarter of 1980. Only at the beginning of 1981 is a recovery in this type of employment projected to begin. In contrast, there is a continuing increase in total Kentucky personal income during the whole of the forecast period; however, inflation may remain at near double digit levels in both 1980 and 1981, so that real income declines slightly in 1980 and increases negligibly in 1981. Compared to the Kentucky forecast in the last issue of *Review and Perspective*, this forecast suggests weaker performance of the Kentucky economy, a result that is due to the Wharton projected continuation of high interest rates and a more sluggish national recovery in late 1980.

*Charles G. Renfro is Acting Executive Director of the KCEA.

ANNUAL SUMMARY TABLE
SELECTED ECONOMIC INDICATORS

Description	1979	1980	1981
Personal Income (Millions)	26238.2	28470.8	31321.6
% Chg.: Ky. Personal Income	13.52	8.51	10.01
Real Personal Income (1972 \$)	16061.7	15902.1	16199.2
% Chg.: Ky. Real Personal Income	4.23	-0.99	1.87
Wage and Salary Disbursement	15872.1	17008.6	18788.2
Mfg. Wage & Salaries	4628.9	4838.0	5394.7
Non-Mfg. Wage & Salaries	11243.3	12170.7	13393.4
Non-Agri. Wage & Salary Empl.	1259.6	1233.0	1248.4
% Chg.: Ky. Non-Ag. Empl.	2.26	-2.11	1.25
Manufacturing Employment	291.8	280.4	288.8
Durable Goods	166.8	154.5	159.6
Non-Durable Goods	125.0	126.0	129.2
Non-Mfg., Non-Agri. Empl.	967.8	952.6	959.6
Civilian Labor Force	1623.7	1622.3	1653.8
Ky. Unemployment Rate (%)	5.7	6.3	6.4

The purpose of this forecast is simply to indicate the effect on Kentucky if the January 28 Wharton national forecast were to be realized. A more detailed assessment of the economic outlook for Kentucky and the United States is provided in the *1980 KCEA Annual Report*. It is important to note also that all the figures shown for 1979 are forecasts. Only for certain months and quarters of 1979 have solidly based estimates so far been published; these can be retrieved from the Kentucky Economic Information System data banks.

QUARTERLY FORECAST TABLE
SELECTED ECONOMIC INDICATORS

Description	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4
Personal Income	27794.6	28134.6	28661.8	29292.2	29936.2	30802.8	31842.5	32704.9
% Chg.: Ky. Personal Income	8.78	4.98	7.71	9.09	9.09	12.09	14.20	11.28
Real Personal Income (1972 \$)	16010.7	15868.3	15852.7	15876.5	15906.6	16076.6	16329.5	16484.3
% Chg.: Ky. Real Pers. Income	-2.30	-3.51	-0.39	0.60	0.76	4.34	6.44	3.85
Wage and Salary Disbursement	16717.4	16879.9	17029.0	17408.4	17915.9	18476.6	19083.0	19677.2
Mfg. Wage & Salaries	4882.0	4827.7	4752.8	4889.3	5149.7	5319.6	5488.4	5621.2
Non-Mfg. Wage & Salaries	11835.3	12052.2	12276.2	12519.0	12766.2	13156.9	13594.6	14056.0
Non-Agri. Wage & Salary Empl.	1244.0	1234.5	1228.8	1224.8	1230.8	1242.3	1256.0	1264.6
% Chg.: Ky. Non-Ag. Empl.	-1.67	-3.00	-1.83	-1.31	1.99	3.79	4.47	2.77
Manufacturing Employment	285.7	281.4	277.7	276.9	282.1	286.7	291.6	294.9
Durable Goods	159.4	155.4	151.9	151.1	155.7	158.6	161.3	162.8
Non-Durable Goods	126.4	126.0	125.8	125.8	126.5	128.0	130.3	132.0
Non-Mfg., Non-Agri. Empl.	958.2	953.1	951.1	947.9	948.7	955.7	964.4	969.7
Civilian Labor Force	1625.3	1621.6	1621.3	1621.1	1631.0	1646.7	1663.3	1674.4
Ky. Unemployment Rate (%)	6.1	6.3	6.4	6.5	6.5	6.5	6.4	6.2

Forecast Date: February 15, 1980.

1. The first part of the report

2. The second part of the report

3. The third part of the report

4. The fourth part of the report

5. The fifth part of the report

6. The sixth part of the report

7. The seventh part of the report

8. The eighth part of the report

9. The ninth part of the report

10. The tenth part of the report

11. The eleventh part of the report

12. The twelfth part of the report

13. The thirteenth part of the report

14. The fourteenth part of the report

15. The fifteenth part of the report

16. The sixteenth part of the report

17. The seventeenth part of the report

18. The eighteenth part of the report

19. The nineteenth part of the report

20. The twentieth part of the report

21. The twenty-first part of the report

22. The twenty-second part of the report

23. The twenty-third part of the report

24. The twenty-fourth part of the report

25. The twenty-fifth part of the report

selected indicators OF ECONOMIC ACTIVITY

These tables of selected indicators of economic activity were prepared by a special-purpose program of the Kentucky Economic Information System. The data in the tables are reported figures which were obtained from a variety of state and federal agencies, as well as from private firms.

	Oct. 1979	Nov. 1979	Dec. 1979	Qtr. IV 1979	% Chg. 79-111 79-IV	% Chg. 78-IV 79-IV
--	--------------	--------------	--------------	-----------------	---------------------------	--------------------------

UNITED STATES DATA

CONSUMER PRICE INDEXES (1967=100, NOT SEASONALLY ADJUSTED)						
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ALL ITEMS	222.89	223.20	223.50	222.89	-0.3%	1.1%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), FOOD AND BEVER	234.57	235.00	235.50	234.57	-0.2%	0.4%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), HOUSING	240.79	241.00	241.50	240.79	-0.1%	0.2%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), APPAREL & ORATE	171.53	171.80	172.00	171.53	-0.1%	0.1%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), TRANSPORTATION	225.10	225.50	226.00	225.10	-0.1%	0.1%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), MEDICAL	230.29	230.50	231.00	230.29	-0.1%	0.1%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ENTERTAINMENT	154.73	155.00	155.50	154.73	-0.1%	0.1%
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), OTHER	203.07	203.50	204.00	203.07	-0.1%	0.1%
PRODUCER PRICE INDEXES (1967=100, NOT SEASONALLY ADJUSTED)						
PRODUCER PRICE INDEX, ALL FARM AND GOODS	226.50	226.80	227.00	226.50	-0.1%	0.1%
PRODUCER PRICE INDEX, FARM AND CONSUMER GOODS	226.50	226.80	227.00	226.50	-0.1%	0.1%
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS	226.37	226.50	226.80	226.37	-0.1%	0.1%
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS FOR MANUFACTURING	245.53	245.80	246.00	245.53	-0.1%	0.1%
PRODUCER PRICE INDEX, CRUDE MATERIALS	292.23	292.50	293.00	292.23	-0.1%	0.1%
PRODUCER PRICE INDEX, CRUDE FOODS, FEED, AND LEEF-HOFF	247.73	248.00	248.50	247.73	-0.1%	0.1%
PRODUCER PRICE INDEX, RUBBER, LEATHER, AND INDUSTRIAL, SPECIALTY, & LUMBER	294.13	294.50	295.00	294.13	-0.1%	0.1%
PRODUCER PRICE INDEX, OTHER, CRUDE, CRUDE, INDUSTRIAL, SPECIALTY, & LUMBER	128.90	129.00	129.50	128.90	-0.1%	0.1%
LABOR FORCE (SEASONALLY ADJUSTED)						
LABOR FORCE, CIVILIAN (BILLIONS)	103.75	103.75	103.75	103.75	0.0%	0.0%
EMPLOYMENT, TOTAL (BILLIONS)	97.66	97.66	97.66	97.66	0.0%	0.0%
UNEMPLOYMENT RATE, TOTAL	5.87	5.87	5.87	5.87	0.0%	0.0%
UNEMPLOYMENT RATE, BLACKS & OTHER MINOR	11.22	11.22	11.22	11.22	0.0%	0.0%
OTHER SELECTED NATIONAL INDICATORS						
FEDERAL RESERVE, TOTAL, SEASONALLY ADJUSTED (BILLIONS OF \$)	2000.50	2000.50	2000.50	2000.50	0.0%	0.0%
CONSUMER INDEX OF 12 LEADING INDICATORS (1967=100)	137.82	137.82	137.82	137.82	0.0%	0.0%
INDEX OF INDUSTRIAL PRODUCTION, SEASONALLY ADJUSTED (1967=100)	137.82	137.82	137.82	137.82	0.0%	0.0%
UNEMPLOYMENT RATE, YIELD ON 3 MONTH TREASURY BILLS	11.80	11.80	11.80	11.80	0.0%	0.0%
PRIVATE RESIDENTIAL BLDG. 1-999 DOLLAR (2000 DOLLAR) (BILLION)	4009.00	4009.00	4009.00	4009.00	0.0%	0.0%
TOTAL INSTALLMENT CREDIT OUTSTANDING AT END OF MONTH (BILLIONS OF \$)	301.50	301.50	301.50	301.50	0.0%	0.0%

KENTUCKY DATA

LABOR FORCE (NOT SEASONALLY ADJUSTED)						
LABOR FORCE, TOTAL (CIVILIAN) (THOUSANDS)	1509.40	1520.70	1528.00	1528.97	0.8%	0.1%
EMPLOYMENT, TOTAL, BY PLACE OF RESIDENCE (THOUSANDS)	1509.90	1497.30	1478.00	1474.73	-0.2%	-0.4%
EMPLOYMENT, AGGREGATE (THOUSANDS)	90.90	91.50	90.10	74.50	-1.6%	-2.2%
EMPLOYMENT, TOTAL NON-AGGREGATE (THOUSANDS)	1419.00	1435.20	1435.10	1443.23	0.1%	0.1%
UNEMPLOYMENT RATE (NOT SEASONALLY ADJUSTED)	5.10	5.10	5.10	5.10	0.0%	0.0%
EMPLOYMENT, TOTAL NON-AGGREGATE (THOUSANDS)	1290.00	1292.20	1292.80	1295.00	0.0%	0.0%
EMPLOYMENT, BIRMINGHAM (THOUSANDS)	50.50	51.00	48.90	50.40	1.0%	1.0%
EMPLOYMENT, CONTRACT EMPLOYMENT	74.80	74.80	72.10	72.10	0.0%	0.0%
EMPLOYMENT, TOTAL MANUFACTURING	291.00	292.60	292.20	292.93	0.0%	0.0%
EMPLOYMENT, MANUFACTURING, NON-AGGREGATE	166.50	167.40	168.40	166.73	0.0%	0.0%
EMPLOYMENT, TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES	124.00	125.20	128.00	126.20	1.0%	0.1%
EMPLOYMENT, WHOLESALE & RETAIL TRADE	70.50	70.40	70.40	70.43	0.0%	0.0%
EMPLOYMENT, FINANCE, INSURANCE & REAL ESTATE (CIVILIAN)	271.20	271.10	270.80	275.37	1.8%	0.0%
EMPLOYMENT, SERVICES (CIVILIAN)	50.60	51.10	50.70	50.80	0.0%	0.0%
EMPLOYMENT, CIVILIAN GOVERNMENT	209.10	209.20	208.30	208.87	0.0%	0.0%
EMPLOYMENT, STATE & LOCAL GOVERNMENT	214.40	215.00	215.00	215.33	0.0%	0.0%
EMPLOYMENT, STATE & LOCAL GOVERNMENT	192.00	194.10	193.00	193.97	0.1%	0.0%

1

7

The Kentucky Unemployment Insurance Program

By Charles W. Hultman*

One of the most comprehensive programs in the Commonwealth to partially offset a temporary loss of wage income is the Unemployment Insurance System. By late 1979, approximately 929.9 thousand Kentucky workers—about 60 percent of the total civilian labor force—were covered by unemployment insurance. With the inclusion of approximately 245 thousand reimbursable and public service employment establishments, about 75 percent of the labor force is covered.

The number of subject firms has also increased significantly in recent years because of expanded coverage. For example, in 1970, approximately 27,300 Kentucky firms were covered; by the end of 1979, 61,500 firms were included.

Unemployment insurance programs were initiated by all states in the late 1930s as a result of incentive provided by the federal government under the Social Security Act. Although they are the same in principle, the programs of the various states differ considerably in terms of details.

An analysis of a state's unemployment insurance program must focus on three basic questions: Are the benefits paid to unemployed workers adequate? Do contributions required of employers put firms in a state at a cost disadvantage compared with those in other states? Do employer contributions cover employee benefits over time in a way to maintain an adequate reserve balance and solvency of the system? A complete answer to these questions involves value judgments as well as extensive analysis and comparison. This short article will simply summarize developments in the Kentucky Unemployment Insurance Program as well as indicating certain tentative conclusions.

The major purpose of the Unemployment Insurance Program is to provide, as a minimum, a subsistence level of income for the worker whose employment has terminated through no fault of his (her) own. When an eligible worker becomes unemployed, he is entitled to benefits of a specified amount from the state Trust Fund for a specified period of time (usually a maximum of 26 weeks). The Trust Fund is maintained as a result of payments (contributions) made by employers; payments are based on the employers' employment and unemployment record and upon the size of the balance of the respective state Trust Fund.

Benefits from the program cover unemployment from seasonal, cyclical and irregular movements in economic activity. Unemployment in Kentucky is generally highest during the first three to four months of the year; lowest, in mid to late summer. On an annual basis, the highest unemployment in the state in recent years was in 1975, the last trough in economic activity. Unemployment also increases on an irregular basis; in early 1978, for example, severe weather conditions and a natural gas shortage led to layoffs in many parts of the state.

The maximum benefit now received under the Program is \$120 per week (55 percent of the state's average weekly wage); about one-half of the unemployed workers received the maximum. Because of inflation, the average weekly wage in covered employment and, accordingly, the weekly benefit amount has increased significantly in recent years. The average weekly benefit amount, which stood at \$60.00 in 1975, rose to \$91.46 in 1979.

During the past few years, the unemployment tax for Kentucky firms has ranged from a low of 0.4 percent of taxable wages of \$6,000 (for the firm with a large Trust Fund balance) to a high of 5.1 percent of taxable wages (for the firm with a large negative Trust Fund balance). On average, employer taxes were about 2.4 percent of taxable payroll in 1979. When the aggregate balance in the state Trust Fund is low, all firms automatically shift to a tax schedule with higher rates; when it is high, they shift to lower rates. Although the program is designed to raise and lower rates automatically to insure that over time employer contributions cover benefit payments, severe inflation, legislative changes in benefit payments, and other factors, it is required that occasional legislative changes be made to insure that the Trust Fund balance is maintained.

An indication of developments affecting the Kentucky Trust Fund balance during the past decade is provided by Table 1. At the beginning of 1970, the Trust Fund balance stood at about \$170 million, and the program covered about 629 thousand workers. Program coverage gradually increased through the first half of the 1970s, but the Trust Fund balance grew because of the low unemployment rate and the excess of employer contributions over employee benefits.

In 1975, Kentucky and the rest of the nation were affected by a sharp recession. Insured unemployment in the Commonwealth rose to 5.8 percent, and benefit payments rose to \$150.4 million dollars. The Trust Fund balance subsequently dropped to slightly more than \$100 million (April 1976) but then commenced to increase as economic recovery continued and unemployment declined somewhat. During 1979, with an average insured unemployment rate of 3.5 percent, total benefits paid out amounted to \$137.7 million; employer payments (contributions) to the Fund amounted to \$126.8 million. Interest received on the invested balance, along with minor adjustments, meant that the year ended with a Trust Fund balance of \$156.0 million, almost \$7.5 million less than the balance at the beginning of the year.

It is clear from the figures in Table 1 that as the program moves into the 1980s, the magnitudes involved are significantly greater than those that prevailed in the early 1970s. The

*Charles W. Hultman is the Associate Dean of the Office for Research, College of Business and Economics, University of Kentucky, and Chairman of the KCEA.

TABLE 1
FACTORS AFFECTING KENTUCKY TRUST FUND BALANCE, 1970-80

Year	Covered Employees* (Thousands)	Insured Unemployment Rate (Percent)	Fund Balance: December 31 of Preceding Year (Millions)	Employer Contributions (Millions)	Employee Benefits (Millions)
1970	629.2	3.2	\$171.0	\$ 28.2	\$ 34.1
1971	642.6	3.5	173.1	31.2	42.2
1972	720.9	2.7	170.8	40.5	39.7
1973	770.5	2.2	177.9	54.6	42.8
1974	794.9	2.8	198.5	69.5	60.2
1975	744.2	5.8	219.2	55.2	150.4
1976	813.2	4.0	135.8	88.8	107.0
1977	857.5	3.4	123.8	110.1	97.4
1978	908.9	3.3	144.0	113.8	101.8
1979	929.9	3.5	163.5	126.8	137.7
1980	NA	NA	156.0	NA	NA

*Does not include reimbursable and public service employment establishments.
NA = Not available.

SOURCE: Kentucky Department for Human Resources.

number of employees covered is about 48 percent greater than in the early 1970s. If reimbursable and public service employment were included, it would be about 85 percent greater than in the early 1970s. In addition, the growth in wages and the weekly benefit amount results in employer contributions and employee benefits that are substantially greater than in the early 1970s.

A major area of concern in the operation of each state's unemployment insurance program is the financial position of that system. During the period from 1972 through 1978, twenty-three different states, the District of Columbia, Puerto Rico, and the Virgin Islands experienced unemployment levels and changes in unemployment insurance systems which resulted in the insolvency of their trust funds. Consequently, during this period, the twenty-six units found it necessary to secure advances from the federal government ranging from a low of \$1.9 million (Ohio) to a high of \$1,187.3 million (Pennsylvania). Kentucky was fortunate in that although it was necessary to move to a higher schedule of employer tax rates, the solvency of the system was never in serious question. Nevertheless, given the increased coverage of the program, the high rate of inflation and the resulting impact on wage rates and weekly benefit amounts, as well as other uncertainties of an economic nature, the financial position of the system must be constantly assessed.

What is the outlook for the Trust Fund balance for the next few years? Clearly, it depends upon economic developments in the Commonwealth. Expected inflation of wages and the resulting increase in both the maximum and average weekly benefit amount, with all other things remaining equal, will mean a larger drain on the Trust Fund. At the same time, aggregate taxable wages will rise somewhat and all firms could shift to a tax schedule with higher rates, leading to an increase in contributions to the Trust Fund. Perhaps the most important variable is the unemployment rate; if this were to rise significantly and remain at a high level over an extended

period of time, the Trust Fund balance could be expected to decline to an unprecedented low. Given the increase in both the insurance coverage and the average benefit amount since the early 1970s, it would appear prudent that the Trust Fund balance be gradually increased and maintained at a higher average level in coming years.

An assessment of the Kentucky Unemployment Insurance Program is tentative at best. It should be noted, however, that in 1978 (the latest year for which comparable figures are available), Kentucky was ranked 25th in the nation in terms of average weekly wage (\$216.99), but that Kentucky was 14th in the nation with an average weekly benefit amount of \$91.46. In addition, Kentucky does not require a one-week waiting period before an insured unemployed worker is eligible for benefit payments.

Kentucky's cost figure is also favorable. For example, during the period 1970-77, the ratio of annual benefit costs to total wages for Kentucky was 1.07 percent; for the nation as a whole, the comparable figure was 1.24 percent. Furthermore, in 1978, the Kentucky employers' average tax rate (on taxable payroll) was 2.2 percent, which was approximately the median figure for the entire nation.

The state program has also had at least a mild counter-cyclical impact. During years in which the unemployment rate has been below average, employer contributions to the Fund have generally exceeded benefit payments; when the unemployment rate has been above average, benefit payments have exceeded employer contributions.

The state has been able to maintain an adequate Trust Fund balance to ensure the solvency of the system. As is true with most other states, inflation and unemployment have focused attention on the need for continued monitoring of the system to ensure an adequate balance in the Trust Fund. Ultimately, of course, it is the ability of the economy to provide jobs and minimize the unemployment rate that keeps the insurance program strong.

Enhancements to the Frankfort Version of the KEIS

By Margaret O. Adams*

Several enhancements have recently been made to the KEIS/Frankfort. As soon as possible, these changes will be documented and owners of the *Kentucky Economic Information System User Manual* who have participated in the KEIS/Frankfort training sessions will receive a revised Frankfort Supplement to the manual. In the interest of timeliness, however, a brief description of these changes is included here. The description assumes that the reader is familiar with the KEIS Procedure of the Kentucky Economic Information System/Frankfort. The enhancements are the work of Charles G. Renfro and Roy A. Sigafus and either of them may be contacted for further information at (606) 258-4626.

Program TABLE: TABLE is a program which produces standardized tables of data for the most recent five periods (years, quarters, or months) that are stored in the database of the KEIS. The user types in TABLE when asked (by the KEIS Procedure) to enter the name of the program he or she wishes to prepare and is then given a choice of preparing either the complete set of tables, or a partial set. If he chooses not to prepare the full set, he is asked to name the bank from which he does want standardized tables: ABANK (annual bank), QBANK (quarterly bank), MBANK (monthly bank), or CBANK (county bank). Sample output from Program TABLE is reproduced on page 12 of this issue of *Review and Perspective* and shows one of the annual bank tables, Table 6: "Transfer Payments to Kentuckians, By Program."

Program DTP/DTP1: The Data Transformation Program (and the interactive version, DTP1) now has several additional capabilities. These build upon the commands described in Section 4.5 of the Frankfort Supplement to the *KEIS User Manual*. The new commands must be preceded by the INPUT BANK and SET DATES commands described in the Frankfort Supplement. The new command are:

LOG: The log command allows a user to obtain a complete or partial log of a specified databank. A log is similar to a databank index; the primary purpose of the log is to indicate the most recent date of revision or update of the data series listed. To obtain a log of an entire databank, the form of the DTP(DTP1) command is: LOG ABANK (or QBANK, MBANK or CBANK). The form of the partial log command is LOG ABANK (1-20) for a log of ABANK series 1 through 20. Any other set of series numbers may be used. We strongly urge that those wishing a log of more than about twenty series, and certainly those requesting a log of an entire databank, run this request in batch mode (not interactively) and route the output to a printer.

SPOOL QUERY: The SPOOL QUERY command allows a user of DTP1 to save the output from his query so that

it can be obtained in printed form after he has finished using the DTP1 program. This option is especially designed for persons who are using the program DTP1 at a CRT, or video, terminal and wish to obtain their output in printed form, after first viewing it on the screen. The procedure for doing this is to enter the command: SPOOL QUERY immediately after the query has been received. Then, after the user completes his use of the DTP1 program, he is asked by the KEIS Procedure whether he wishes to RETURN (R) or LEAVE (L) and to enter the letter. If either 'R' or 'L' is entered, it is assumed that the user does not want printed copy of the spooled information and it is deleted. If, however, PRINT is entered at this point, the user will be offered an opportunity to change the print option. (See p. 4.2.9 of the Frankfort Supplement to the *KEIS User Manual*.) The spooled data will then be printed on the printer indicated and the user will be returned to the RETURN or LEAVE point.

COMPUTE STATISTICS: The command, COMPUTE STATISTICS: followed by the series name and the series number (in parenthesis) will produce the mean, the standard deviation, the variance, and trend statistics for the data series requested, for the time period set. These statistics can be computed for any number of series within a databank; the command will be similar to the example given for computing statistics for Kentucky personal income.

COMPUTE STATISTICS:YS(1)

with each following series name(series number) separated by a comma.

The user who does not wish all these statistics also has the choice of selecting those he does want. For example, any of the following commands can be entered:

COMPUTE MEAN:YS(1)

COMPUTE STANDARD DEVIATION:YS(1)

COMPUTE VARIANCE:YS(1)

COMPUTE TREND STATISTICS:YS(1)

COMPUTE CORRELATION: The command, COMPUTE CORRELATION: followed by at least two series names (and their numbers in the standard DTP format) will produce the correlation between two (or more) data series from the KEIS database. Each series name(series number) is separated by a comma.

COMPUTE ABS % CHG: The command, COMPUTE ABS % CHG: followed by a series name and the series number (in parenthesis), followed by the starting time period, followed by the end time period—both time frames

**Margaret O. Adams is Manager of the Kentucky Economic Information System and editor of this publication.*

having been enclosed in parentheses and internally separated by a comma, will produce a calculation of the absolute percent change (or point to point percent change) in this series for the specified time period. For example, the command,

COMPUTE ABS % CHG:YS(1)(1969,1979)

will produce the calculation of the percent change in the value of YS (Kentucky Personal Income) from 1969 to 1979. This command differs from the %CHG command now documented in the DTP program (p. 4.5.9 of the Frankfort Supplement to the *KEIS User Manual*); the %CHG command computes a contiguous period to contiguous period percentage change in the value of the series.

KCEA News & Notes

(continued from page 2)

Dr. Renfro's forecasts for the performance of the Kentucky economy are based upon the national forecasts, but use the Kentucky Quarterly Econometric Model, which he has developed. One forecast indicates the likely performance of the Kentucky economy if the U.S. economy does not experience a recession. The other, based upon the Wharton national forecast, indicates the effect on Kentucky of two quarters of decline in real GNP. The latter Kentucky forecast is similar to the one presented in this issue of *Review and Perspective* (pp. 3-5), but takes account of the benchmarking revisions in the labor force and employment data made by the Kentucky Department for Human Resources, since that forecast was made on February 15, 1980.

Other articles in the 1980 KCEA Annual Report include, "Agriculture in Kentucky: Situation, Recent Trends, and Projected Development," by D. Milton Shuffett, "Coal in Kentucky: Situation, Recent Trends, and Projected Development," by Arthur F. Nicholson, "Regional Analysis of Kentucky," by Charles W. Hultman, "Lexington: An Economic Perspective," by L. Randolph McGee and Richard Thalheimer, and "Louisville: An Economic Perspective," by James R. McCabe.

Single copies of the 1980 KCEA Annual Report will be available from the KCEA office.

* * *

The KCEA recently issued two new Policy Papers, "Indexing Kentucky's Individual Income Tax," by Drs. William J. Stober and Don M. Soule, and "Piggybacking: The Federal-State Collection Act of 1972," by Dr. Ray M. Ware. Both papers are concerned with reform of the state income tax. The Stober/Soule paper discusses indexing, the act of adjusting the

Two additional programs have been added to the KEIS Procedure on an experimental basis. These are programs OLSI (Ordinary Least Squares), an interactive regression program, and PVTBANK, a program to allow a user of the KEIS to create his private, or agency, databank. Such an agency bank may have data drawn from any of the public KEIS databanks or may have data which the user puts in, or a combination of these methods of databank creation. The Agency Bank is under the complete control of the creating agency. All Agency Banks can utilize all the software of the KEIS/Frankfort. Persons interested in further information or in instructions in the use of either OLSI or PVTBANK should contact Charles Renfro (606) 258-4626.

income tax of an individual taxpayer to compensate for inflation by changing the marginal tax rates or by some other method, as one means of reform. The Ware paper considers the practical implications of the Federal-State Collection Act of 1972.

Single copies of either of these papers are available, upon request, from the KCEA (451 Commerce Building, University of Kentucky, Lexington, Kentucky 40506).

* * *

The January 1980 issue of *Growth and Change*, a quarterly publication of the College of Business and Economics, University of Kentucky, contains several articles of probable interest to our readers. These include, among others, an analysis of changing employment opportunities by occupational group, and an article discussing the impacts of building moratoria on housing markets within a region. Subscriptions to *Growth and Change* may be obtained by writing to the Associate Editor, 644 Maxwellton Court, Lexington, Kentucky 40506.

* * *

TECHNICAL NOTE:

Readers of the Kentucky data in the tables of "Selected Indicators of Economic Activity" (page 7 of this issue) will note that the data reported there for fourth quarter, 1979, Tax Receipts, State Road Fund (state share) show an increase of 41.59 percent over the reported comparable data for the fourth quarter, 1978. In October 1979, \$32,642,816 in coal severance tax receipts were transferred from the General Fund into the State Road Fund, and these receipts are tallied as part of the fourth quarter 1979 State Road Fund Tax Receipts. In 1978, the comparable transfer of coal severance tax receipts (\$14,531,753) was made in September, and was tallied with the third quarter 1978 State Road Fund Tax Receipts.

The effect of the difference in the quarters in which this transfer was made is that the comparison of total tax receipts in the State Road Fund from fourth quarter 1978 to fourth quarter 1979 has been skewed upward. A comparison of the total 1978 and 1979 July through December data will show that there has been a decline of 11.9 percent in the Tax Receipts, State Road Fund (state share) for that six-month period, 1978 to 1979.

—moa—

KENTUCKY ECONOMY Review & Perspective

THE KENTUCKY COUNCIL OF ECONOMIC ADVISORS
University of Kentucky, Lexington, Kentucky 40506

June 1980
Vol. 4. No. 2

KCEA Review and Forecast

by Charles W. Hultman*

Most indicators suggest that the U.S. economy has experienced a decline in the level of economic activity; the major questions now are (a) How deep? and (b) How long? At the national level some observers anticipate a longer and deeper recession than was expected to be the case as recently as a month ago. Others still predict that the downturn will be relatively mild and that recovery will begin in early 1981. Nevertheless, some sectors, particularly housing, the automobile industry and various closely related industries, are being affected quite seriously.

The latest Wharton Econometric Forecasting Associates, Inc. forecast, dated April 27, 1980, assumes an increase in the rate of growth of defense expenditures, and a federal deficit of \$27.7 billion in FY 1980, \$33.6 billion in 1981. In addition, inflation is expected to be less serious throughout the year. The Wharton outlook for 1980 is for recession through the end of 1980, and a weak recovery in 1981. Unemployment, which amounted to about 5.8 percent in 1979 would increase to about 6.7 percent in 1980 and 7.4 percent in 1981.

What can be expected for the Commonwealth? The construction industry has already experienced major layoffs as reflected in various series showing contract construction and employment in contract construction (see p. 7). One encouraging sign in residential construction and related industries is the recent and sharp decline in mortgage rates. These rates, which generally ranged from 16 to as high as 20 percent across the state earlier this year, have declined to the 13 percent range in some areas. The durable goods industries in the state will also be adversely affected in both 1980 and 1981. Part of the decline will occur in the automobile and related industries, part in the sector providing goods for the construction industry, and part among firms producing other types of consumer durable goods.

The Kentucky Quarterly Econometric Model (pp. 3-5) suggests that real personal income could decrease slightly during 1980 and 1981. Total resident employment, which reached a record annual high of 1,476 thousand in 1979, will also decline somewhat in 1980 although, as noted, the major impact would be felt in a few sectors. Slight employment

declines are also expected in 1980 in the regulated industries, the government sector and finance, insurance and real estate. The Model also suggests that the recession may extend into 1981 although total employment would begin to pick up in 1981.

Evidence of a serious recession does not yet appear to be reflected in Kentucky's actual labor force employment rate which so far this year has ranged above the figures for comparable months last year. This may be because some workers have been "furloughed;" in other instances, reports of industry difficulties relate to planned rather than actual layoffs. Thus it can realistically be expected that the unemployment rate, on a monthly basis, will continue to exceed last year's throughout both 1980 and 1981.

The decline in the national composite index of twelve leading indicators and other recent evidence that nationally the recession may be sharp, is likely to promote federal action to stimulate the economy more than anticipated, given that 1980 is a major election year. A major problem of economic forecasting, of course, is that of predicting the actions to be taken by the federal government. Although such action may or may not lead to an appropriately higher level of consumer and investor spending at the most opportune time, it would undoubtedly serve to reduce the length of a recessionary period. Early recovery will depend upon several factors. Unfavorable signs or conditions include the high level of consumer debt and uncertainty in the field of energy. Favorable factors include low business inventories, a need for capital expenditures in some industries, the need for new housing for a growing population, and the availability of energy efficient cars from U.S. producers.

Inflation will continue to be a problem for Kentuckians as well as the rest of the nation; although the rate of the price increase has been expected to decline throughout the remainder of 1980 and during 1981, inflationary pressures may be more severe if expansionary policies are introduced at the federal level.

**Charles W. Hultman is the Associate Dean of the Office for Research, College of Business and Economics, University of Kentucky, and Chairman of the KCEA.*



Several enhancements have recently been made to the KEIS, on both the KECNET and state government version. Disaggregated county-level personal income data have been extended through 1978 and the years 1973-77 have been updated. These data revise the estimates published in the *Kentucky Personal Income Report* (November 1979). Comparable personal income data for the years 1965-70 will soon be added for the first time. Disaggregated quarterly state-level personal income data through the fourth quarter, 1979, will also be available soon.

Three new programs have been implemented. Two, entitled ADD2 and ADD3, are variations of the ADDITEM program and produce tables in which the absolute percentage change (point to point percentage change) has been calculated for any

series indicated by the user, for any period of time requested by him or her. The table produced by ADD2 organizes this output according to ADDs (as in ADDITEM), while the table produced by ADD3 organizes the data in alphabetical order, according to county. The third new program SASLINK, allows the use of the KEIS database with SAS, the Statistical Analysis System, and through SAS, offers an indirect link to the BMDP package. Users of the KEIS/Frankfort can access any of these programs by responding with the appropriate program name at the program choice point of the KEIS Procedure. Draft copies of a writeup for program SASLINK are available. For further information about any of these programs, contact Roy Sigafus, KCEA (606) 258-4626.

Orders are now being taken for the *Kentucky Council of Economic Advisors Annual Report 1980*. Single copies are available free of charge to persons in federal, state, and local government, and to persons affiliated with academic institutions or other nonprofit organizations. There will be a charge of \$10.00 for the *Annual Report* to all others, or for multiple copies. The *Annual Report* may be obtained by writing the KCEA office.

Dr. Charles G. Renfro, Executive Director of the KCEA, presented two papers on May 1-2, 1980 at the Eleventh Annual Pittsburg Conference on Modeling and Simulation, "The Kentucky Quarterly Econometric Model: Recent Developments," and "On the Observability and Controlability of a State Economy." The first of these provides a brief description of the current version of the Kentucky Quarterly Econometric Model and will be published by the Instrument Society of America in the conference proceedings. Copies of this paper are also available from the KCEA office. Dr. Renfro also recently addressed the annual dinner meeting of the Purchasing Managers Association of Central Kentucky on the topic "Prices and the Economic Outlook."

Margaret O. Adams, Manager, Kentucky Economic Information System (KEIS), talked about "An Information System for State and Local Government Planning and Analysis: The Example of the Kentucky Economic Information System," at the annual meeting of the International Association for Social Science Information Service and Technology, Washington, D.C., May 3, 1980. Part of this talk was based upon responses to a survey Ms. Adams conducted of all state government personnel who had been trained to use the KEIS/Frankfort. Copies of her paper are also available from the KCEA office.

The staff of the KEIS continues to hold training sessions in the use of the KEIS/Frankfort. The most recent of these have been at the offices of the Kentucky Department of Revenue, where the staff of that agency were trained to maintain and update the private agency banks created for them by the KEIS staff, as well as being trained to access and manipulate the public data banks of the KEIS/Frankfort. State agency personnel who wish to schedule a KEIS/Frankfort training session should contact Margaret O. Adams, KCEA (606) 258-4626.

-moa-

KENTUCKY ECONOMY: Review & Perspective

Published by the
Kentucky Council of Economic Advisors
451 Commerce Building
University of Kentucky
Lexington, Kentucky 40506
(606) 258-4626

ISSN 0270-1421
OCLC: 5289744

Charles G. Renfro, Executive Director
Margaret O'Neill Adams, Editor

The *Kentucky Economy: Review & Perspective* is paid for with state funds and published by the Kentucky Council of Economic Advisors (KCEA). The KCEA is a state government agency, staff support for which is provided by the Center for Applied Economic Research, a unit of the Office for Research, College of Business and Economics, University of Kentucky.

This quarterly publication is intended, primarily, to provide forecasts and current information concerning the Kentucky economy. More generally it provides a forum for the publication of short, expository articles dealing with current research or information systems, the focus of which is some aspect of the Kentucky economy.

Articles submitted for publication should be sent to the Editor at the address given above. All submissions will be reviewed independently by persons recognized as knowledgeable in the specific subject discussed. However, the ultimate responsibility for content rests with the author.

Materials appearing in this publication may be reproduced without permission, although proper credit should be given to *Kentucky Economy: Review & Perspective* and its contributors for the use of any published material.

Subscriptions to this publication are available, without cost, upon request.

Kentucky Econometric Model Forecast

by Charles G. Renfro*

This forecast for Kentucky is based upon the April 27, 1980 *Pre-Meeting Control Forecast* made by Wharton Econometric Forecasting Associates, using the Wharton Econometric Model of the United States. The Wharton forecast predicts a three quarter decline in real GNP beginning in the second quarter of 1980, followed by a weak recovery in 1981. They show a decline in real GNP of 1.2 percent from peak to trough during 1980, followed by an increase of 2.5 percent from the fourth quarter of 1980 to the fourth quarter of 1981. This results from their presumption of no tax cut in 1980 and continued fairly restrictive monetary policies. This national forecast is characterized by a progressively increasing unemployment rate, rising to a peak in the middle of 1981, a substantial decline of the Consumer Price Index during 1980, and a gradual decline in interest rates during the year from the peak in the second quarter of 1980.

The likely impact on Kentucky of this national scenario is shown in tables on this page and pages 4 and 5 to include a five quarter decline in Kentucky nonagricultural wage and salary employment, beginning in the second quarter of 1980. Only in the middle of 1981 is a recovery in this type of employment projected to begin. There is also a decline in Kentucky real Personal Income during this period, although current dollar Personal Income continues to increase.

The purpose of this forecast is simply to indicate the effect on Kentucky if the April 27 Wharton national forecast were to be realized. A more detailed assessment of the economic outlook for Kentucky and the United States is presented in the recently published 1980 *KCEA Annual Report*. However, in order to provide a convenient means of assessing the relative

ANNUAL SUMMARY TABLE
SELECTED ECONOMIC INDICATORS

Description	1979	1980	1981
Personal Income (Millions)	25907.5	28597.8	31117.9
% Chg.: Ky. Personal Income	12.13	10.38	8.81
Real Personal Income (Millions 1972 \$)	15858.2	15845.1	15831.2
% Chg.: Ky. Real Personal Income	2.95	-0.08	-0.09
Wage and Salary Disbursement	15812.0	17225.9	18700.8
Mfg. Wage & Salaries	4673.3	4967.2	5335.7
Non-Mfg. Wage & Salaries	11138.7	12258.8	13365.1
Non-Agri. Wage & Salary Employment (Thousands)	1240.0	1227.0	1215.3
% Chg.: Ky. Non-Agri. Employment	2.49	-1.05	-0.95
Manufacturing Employment	294.5	284.8	276.5
Durable Goods	169.4	156.0	145.2
Non-Durable Goods	125.1	128.8	131.2
Non-Mfg., Non-Agri. Employment	945.5	942.2	938.9
Civilian Labor Force (Thousands)	1584.7	1588.1	1594.7
Ky. Unemployment Rate (%)	5.7	6.2	6.4

impact of the projected recession on Kentucky, tables illustrating the difference between the *Annual Report* Kentucky Control Forecast and this new forecast are shown on page 12 of this issue of *Review & Perspective*.

It is important to note that, in the forecast tables, all the figures shown for 1979 are still *forecasts*, as explained in the 1980 *Annual Report* (p. 35).

*Charles G. Renfro is Executive Director of the Kentucky Council of Economic Advisors.

QUARTERLY FORECAST TABLE
SELECTED ECONOMIC INDICATORS

Description	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4
Personal Income (Millions)	27765.9	28210.6	28888.0	29526.8	29971.4	30561.8	31510.7	32427.7
% Chg.: Ky. Personal Income	11.41	6.56	9.95	9.14	6.16	8.11	13.01	12.16
Real Personal Income (Millions 1972 \$)	15957.4	15813.1	15811.7	15798.2	15700.1	15696.9	15882.4	16045.4
% Chg.: Ky. Real Personal Income	-0.85	-3.57	-0.04	-0.34	-2.46	-0.08	4.81	4.17
Wage and Salary Disbursement	16782.0	17062.3	17322.3	17737.2	18083.8	18398.6	18853.7	19467.0
Mfg. Wage & Salaries	4989.8	4940.2	4895.3	5043.5	5222.4	5301.6	5364.7	5454.1
Non-Mfg. Wage & Salaries	11792.2	12122.2	12427.0	12693.6	12861.5	13097.0	13489.0	14012.9
Non-Agri. Wage & Salary Employment (Thousands)	1238.5	1232.6	1223.1	1213.9	1211.9	1211.8	1216.0	1221.6
% Chg.: Ky. Non-Agri. Employment	0.40	-1.91	-3.04	-2.99	-0.64	-0.03	1.37	1.88
Manufacturing Employment	291.9	285.8	281.7	279.7	278.2	275.7	275.6	276.4
Durable Goods	163.9	158.0	152.4	149.6	147.7	144.9	144.4	144.1
Non-Durable Goods	128.0	127.8	129.3	130.2	130.6	130.8	131.3	132.3
Non-Mfg., Non-Agri. Employment	946.6	946.8	941.4	934.1	933.7	936.2	940.3	945.3
Civilian Labor Force (Thousands)	1594.5	1591.9	1585.9	1580.0	1582.8	1588.5	1598.3	1609.5
Ky. Unemployment Rate (%)	6.0	6.1	6.2	6.4	6.5	6.5	6.5	6.4

Forecast Date: May 25, 1980.

KENTUCKY QUARTERLY ECONOMETRIC MODEL

PERSONAL INCOME

DESCRIPTION	QUARTERLY								ANNUAL		
	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4	1979	1980	1981
PERSONAL INCOME (MILLIONS)	12765.9	28210.6	28888.0	29526.8	29971.4	30561.8	31510.7	32427.7	125907.5	28597.8	31117.9
WAGE & SALARY DISBURSEMENTS	16782.0	17062.3	17322.3	17737.2	18083.8	18398.6	18853.7	19467.0	15812.0	17225.9	18700.8
NON-AGRI. WAGES & SALARIES	16644.5	16924.1	17185.7	17601.3	17941.2	18249.0	18705.5	19319.3	15697.1	17088.9	18553.8
MANUFACTURING	4989.8	4940.2	4895.3	5043.5	5222.4	5301.6	5364.7	5454.1	4673.5	4967.2	5335.7
DURABLE GOODS	2811.5	2674.3	2601.3	2647.8	2790.9	2745.1	2760.7	2790.8	2712.3	2683.7	2771.9
NON-DURABLE GOODS	2178.3	2265.8	2294.0	2395.7	2431.5	2556.6	2604.0	2663.3	1961.0	2283.5	2563.8
MINING	1152.1	1268.0	1330.1	1383.0	1410.2	1442.4	1461.1	1491.7	1081.5	1278.3	1451.4
COAL MINING	1058.5	1189.7	1248.9	1298.9	1323.1	1353.0	1369.0	1396.5	1010.9	1199.0	1360.4
OTHER MINING	73.6	78.3	81.2	84.1	87.1	89.4	92.1	95.3	70.6	79.3	91.0
CONTRACT CONSTRUCTION	928.0	894.8	868.6	846.0	753.4	748.5	847.2	1078.7	977.9	884.4	857.0
REGULATED INDUSTRIES	1306.6	1328.2	1365.8	1397.7	1449.8	1450.3	1483.7	1520.3	1220.9	1349.6	1476.0
WHOLESALE & RETAIL TRADE	2668.1	2741.0	2809.2	2875.1	2965.1	3034.9	3120.5	3212.2	2471.7	2773.3	3083.2
SERVICES	2108.0	2211.2	2336.4	2419.1	2452.1	2540.6	2634.4	2718.9	1891.9	2268.7	2586.5
FINANCE, INS. & REAL ESTATE	606.0	603.3	617.2	636.6	672.2	678.2	700.7	709.7	553.2	615.8	690.7
GOVERNMENT	2905.9	2937.4	2963.1	3000.3	3016.1	3052.5	3093.2	3133.7	2826.6	2951.7	3073.9
CIVILIAN GOVERNMENT	2370.9	2415.4	2437.1	2469.3	2472.1	2491.5	2511.2	2546.7	2323.9	2427.9	2505.4
FEDERAL CIVILIAN	652.4	658.7	663.9	681.5	675.0	681.6	685.4	703.7	627.3	664.1	686.4
STATE & LOC. GOV'T	1738.5	1756.7	1773.2	1786.8	1797.1	1809.9	1825.8	1843.0	1696.6	1763.8	1819.0
FEDERAL MILITARY	515.0	522.0	526.0	532.0	544.0	561.0	582.0	582.0	502.8	523.8	568.5
AGRICULTURAL WAGE & SALARY	137.5	138.2	136.6	135.9	142.7	149.5	148.2	147.2	115.0	137.1	142.0
OTHER LABOR INCOME	2055.1	2118.7	2181.2	2268.7	2350.2	2424.3	2523.4	2652.3	1860.6	2155.9	2487.6
PROPRIETORS NET INCOME	2719.9	2700.3	2692.9	2725.1	2815.7	2911.0	2953.0	3022.4	2617.3	2709.6	2925.5
NON-FARM	2068.4	2074.2	2101.3	2165.5	2229.8	2301.5	2377.7	2461.3	1939.3	2101.8	2342.6
FARM	653.5	626.1	591.6	559.6	585.9	609.4	575.2	561.1	677.9	607.7	582.9
RESIDENCE ADJUSTMENT	290.6	293.9	295.4	306.5	319.1	327.0	330.9	335.5	269.7	296.6	328.1
OTHER INCOME ITEMS	7138.8	7269.5	7644.4	7757.6	7846.0	7969.6	8348.7	8485.5	6479.5	7452.6	8162.4
PROPERTY INCOME	2994.3	3029.4	3062.3	3071.4	3080.2	3107.8	3157.3	3212.9	2681.8	3039.4	3139.6
TRANSFER PAYMENTS	4144.5	4240.2	4582.1	4686.2	4765.8	4861.8	5191.4	5272.6	3797.7	4413.2	5022.9
LESS: PERSONAL CONTRIBUTIONS FOR SOCIAL INSURANCE	1220.4	1234.1	1248.4	1268.3	1443.4	1468.6	1498.9	1535.0	1131.6	1242.8	1486.5

FORECAST DATE: MAY 25, 1980

KENTUCKY QUARTERLY ECONOMETRIC MODEL

EMPLOYMENT AND HOURS

DESCRIPTION	QUARTERLY								ANNUAL		
	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4	1979	1980	1981
EMPLOYMENT (THOUSANDS)											
TOTAL EMPLOYMENT	1481.7	1477.5	1469.8	1462.3	1463.5	1468.5	1478.1	1489.7	1477.8	1472.8	1474.9
NON-AGRI. EMPLOYMENT	1390.0	1385.6	1378.0	1371.1	1371.7	1375.5	1385.0	1396.5	1390.4	1381.2	1382.2
WAGE & SALARY EMPLOYMENT	1238.5	1232.6	1223.1	1213.9	1211.9	1211.8	1216.0	1221.6	1240.0	1227.0	1215.3
MANUFACTURING	291.9	285.8	281.7	279.7	278.2	275.7	275.6	276.4	294.5	284.8	276.5
DURABLE GOODS	163.9	158.0	152.4	149.6	147.7	144.9	144.4	144.1	169.4	156.0	145.2
NON-DURABLE GOODS	128.0	127.8	129.3	130.2	130.6	130.8	131.3	132.3	125.1	128.8	131.2
MINING	54.4	55.5	56.7	58.2	58.4	58.8	58.6	58.8	54.8	56.2	58.6
COAL MINING	49.1	50.3	51.5	52.9	53.0	53.3	53.1	53.2	49.5	50.9	53.1
OTHER	5.3	5.2	5.2	5.3	5.4	5.4	5.5	5.6	5.2	5.2	5.5
CONTRACT CONSTRUCTION	65.4	63.0	58.2	50.6	50.5	51.8	53.8	54.9	70.2	59.3	52.8
REGULATED INDUSTRIES	69.4	70.0	69.3	67.8	66.5	67.0	67.4	67.8	70.3	69.1	67.2
WHOLESALE & RETAIL TRADE	221.2	221.5	222.2	222.7	224.1	225.5	227.2	229.2	269.4	271.9	276.5
SERVICES	211.5	214.9	215.7	215.8	216.4	216.7	217.9	220.0	203.5	214.5	217.8
FINANCE, INSURANCE & REAL ESTATE	49.6	47.4	45.9	46.6	47.9	48.0	47.8	48.0	49.5	47.4	47.9
GOVERNMENT	225.1	224.4	223.5	222.3	219.8	218.5	217.5	216.6	227.8	223.8	218.1
FEDERAL	39.0	39.0	39.0	39.0	38.0	38.0	38.0	38.0	39.0	39.0	38.0
STATE & LOCAL	186.1	185.4	184.5	183.3	181.8	180.5	179.5	178.6	188.8	184.8	180.1
EDUCATION	106.3	106.1	105.8	105.2	104.8	104.3	104.1	104.0	105.3	105.8	104.3
OTHER	79.8	79.3	78.7	78.1	77.0	76.2	75.4	74.6	83.5	79.0	75.8
ALL OTHER NON-AG EMPL	151.5	153.1	154.9	157.2	159.8	163.6	169.0	174.9	150.4	154.2	166.8
AGRICULTURAL	74.6	74.8	74.7	74.2	74.8	76.0	76.1	76.1	70.4	74.6	75.8
HIRED WORKERS	24.5	24.3	23.9	22.9	23.0	23.5	23.0	22.6	21.0	23.9	23.1
FAMILY & OTHER UNPAID	50.2	50.6	50.9	51.4	51.8	52.5	53.1	53.5	49.3	50.7	52.7
HOURS & MANHOURS											
AVERAGE WEEKLY HOURS											
DURABLE MANUFACTURING	40.3	39.5	38.5	38.9	40.0	40.2	39.5	39.1	40.1	39.3	39.7
NON-DURABLE MANUFACTURING	40.2	40.6	39.7	39.8	40.0	40.0	40.0	40.0	39.5	40.1	40.0
MANHOURS											
TOTAL MANUFACTURING	6110.1	5941.2	5720.3	5716.5	5784.0	5751.6	5695.2	5680.5	6102.9	5872.0	5727.8
DURABLE GOODS	3434.2	3243.0	3051.2	3022.3	3067.8	3031.2	2964.4	2928.5	3535.0	3187.7	2998.0
NON-DURABLE GOODS	2675.8	2698.3	2669.1	2694.2	2716.2	2720.4	2730.8	2751.9	2567.8	2684.3	2729.8
DAYS & MAN-DAYS											
COAL MINING DAYS WORKED	47.0	50.8	51.2	51.0	51.0	51.0	51.0	51.0	47.0	50.0	51.0
COAL MINING MAN DAYS	9245.3	10219.7	10550.8	10792.2	10811.0	10873.1	10819.7	10854.5	9323.1	10202.0	10839.6
LABOR FORCE											
RESIDENT ADJUSTED LABOR FORCE	1594.5	1591.9	1585.9	1580.0	1582.8	1588.5	1598.3	1609.5	1584.7	1588.1	1594.7
LABOR FORCE (NOT RES. ADJ.)	1577.5	1574.9	1568.9	1563.0	1565.8	1571.5	1581.3	1592.5	1567.7	1571.1	1577.7
UNEMPLOYMENT	95.8	97.4	99.1	100.7	102.2	103.0	103.2	102.8	89.9	98.3	102.8
UNEMPLOYMENT RATE (%)	6.0	6.1	6.2	6.4	6.5	6.5	6.5	6.4	5.7	6.2	6.4

FORECAST DATE: MAY 25, 1980

selected indicators OF ECONOMIC

These tables of selected indicators of economic activity were prepared by a special-purpose program of the Kentucky Economic Information System. The data in the tables are reported figures which were obtained from a variety of state and federal agencies, as well as from private firms.

Jan. 1980	Feb. 1980	Mar. 1980	Qtr. I 1980	% Chg. 79-IV 80-I	% Chg. 79-I 80-I
--------------	--------------	--------------	----------------	-------------------------	------------------------

UNITED STATES DATA

CONSUMER PRICE INDEXES (1967=100, NOT SEASONALLY ADJUSTED)

CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ALL ITEMS	233.20	236.40	239.80	236.47	3.90	14.25
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), FOOD AND BEVER	237.50	238.60	241.00	239.03	2.34	7.82
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), HOUSING	247.30	250.50	254.50	250.77	4.18	16.40
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), APPAR & UPKEEP	171.00	171.90	176.00	172.97	0.78	6.68
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), TRANSPORTATION	233.50	239.60	243.70	238.93	6.15	21.99
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), MEDICAL	253.90	257.90	260.20	257.33	3.68	10.73
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ENTERTAINMENT	195.30	197.80	200.60	197.90	2.68	7.89
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), OTHER	206.30	208.10	208.90	207.77	2.31	8.36
CONSUMER PRICE INDEX (CPI-U), SPECIAL INDEX: ENERGY	327.90	344.60	355.00	342.50	10.60	45.19

PRODUCER PRICE INDEXES (1967=100, NOT SEASONALLY ADJUSTED)

PRODUCER PRICE INDEX, ALL FINISHED GOODS	232.10	235.40	238.20	235.23	4.04	13.42
PRODUCER PRICE INDEX, FINISHED CONSUMER GOODS	233.20	237.30	240.60	237.03	4.48	15.08
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS	265.60	271.10	273.20	269.97	5.22	18.11
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS FOR MANUFACTURING	255.20	259.20	259.00	257.80	4.90	16.35
PRODUCER PRICE INDEX, CRUDE MATERIALS	296.90	308.30	303.30	302.83	3.59	12.55
PRODUCER PRICE INDEX, CRUDE FOODSTUFFS AND FEEDSTUFFS	243.00	252.60	245.90	247.17	-0.28	2.40
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL, SPOT (1967=100)	390.90	390.90	390.90	390.90	-0.82	-1.00
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL, CONTRACT (JUNE 76=100)	129.80	130.00	130.80	130.20	1.03	4.55

CONSUMER PRICES: ENERGY (U.S. CITY AVERAGE)

AVG PRICE FOR UTILITY (PIPED) GAS, PER 40 THERMS	15.79	15.92	16.33	16.01	2.88	18.85
AVG PRICE FOR UTILITY (PIPED) GAS, PER 100 THERMS	34.93	35.23	36.23	35.46	2.71	21.57
AVG PRICE FOR ELECTRICITY, PER 500 KWH	26.70	27.70	28.15	27.52	4.99	15.40
AVG PRICE FOR FUEL OIL #2 (HOME HEATING OIL), PER GALLON	0.93	0.98	1.01	0.97	11.74	67.65
AVG PRICE, GASOLINE, ALL TYPES, PER GALLON	1.11	1.19	1.23	1.18	14.97	65.15
AVG PRICE, GASOLINE, LEADED REGULAR, PER GALLON	1.09	1.16	1.20	1.15	15.13	67.74
AVG PRICE, GASOLINE, UNLEADED REGULAR, PER GALLON	1.13	1.21	1.25	1.20	14.55	63.11
AVG PRICE, GASOLINE, LEADED PREMIUM, PER GALLON	1.15	1.23	1.28	1.22	14.99	61.83

LABOR FORCE (SEASONALLY ADJUSTED)

LABOR FORCE, CIVILIAN (MILLIONS)	104.23	104.26	104.09	104.19	0.43	1.84
EMPLOYMENT, TOTAL (MILLIONS)	97.80	97.95	97.66	97.80	0.14	1.43
EMPLOYMENT, AGRICULTURE	3.27	3.33	3.36	3.32	-0.84	0.68
EMPLOYMENT, NONAGRICULTURAL INDUSTRIES	94.53	94.63	94.30	94.49	0.18	1.46
UNEMPLOYMENT RATE, TOTAL	6.20	6.00	6.20	6.13	4.55	6.98
UNEMPLOYMENT RATE, BLACKS & OTHER RACIAL MINORITIES	11.80	11.50	11.80	11.70	4.15	2.03

OTHER SELECTED NATIONAL INDICATORS:

PERSONAL INCOME, TOTAL, SEASONALLY ADJUSTED (BILLIONS OF \$)	2046.50	2053.80	2069.40	2057.20	2.60	11.04
COMPOSITE INDEX OF 12 LEADING INDICATORS (1967=100)	135.90	135.40	132.60	134.61	-1.51	-5.65
INDEX OF INDUSTRIAL PRODUCTION, SEASONALLY ADJUSTED (1967=100)	152.70	152.40	151.20	152.10	-0.04	-0.04
INTEREST RATE, YIELD ON 3-MONTH TREASURY BILLS	12.04	12.81	15.53	13.44	14.04	43.80
PRIVATE RESIDENTIAL BLDG. 16000 PERMIT ISSUING PLACES (SADJ THOU)	1264.00	1142.00	932.00	3338.00	-16.74	-25.77
TOTAL INSTALLMENT CREDIT OUTSTANDING AT END OF MONTH (BILLIONS OF \$)	308.98	308.19	307.96	308.38	2.31	12.35

KENTUCKY DATA

	Jan. 1980	Feb. 1980	Mar. 1980	Qtr. I 1980	% Chg. 79-IV 80-I	% Chg. 79-I 80-I
LABOR FORCE (NOT SEASONALLY ADJUSTED)						
LABOR FORCE, TOTAL CIVILIAN	1609.30	1588.80	1582.00	1593.63	0.93	3.01
EMPLOYMENT, TOTAL, BY PLACE OF RESIDENCE (THOUSANDS)	1489.80	1465.30	1479.70	1478.27	-1.10	3.66
EMPLOYMENT, AGRICULTURAL	47.70	50.50	55.60	51.27	-11.19	-0.65
EMPLOYMENT, TOTAL NON-AGRICULTURAL	1442.10	1414.80	1424.10	1427.00	0.48	3.82
UNEMPLOYMENT RATE (NOT SEASONALLY ADJUSTED)	7.40	7.80	6.50	7.24	35.70	8.93
EMPLOYMENT, TOTAL NON-AGRICULTURAL WAGE AND SALARY (THOUSANDS)	1229.80	1214.30	1223.30	1222.47	-3.11	0.71
EMPLOYMENT, BITUMINOUS COAL & LIGNITE MINING (SIC 12)	48.80	48.90	48.50	48.73	-3.41	1.39
EMPLOYMENT, CONTRACT CONSTRUCTION	60.30	55.10	58.40	57.93	-19.65	-0.00
EMPLOYMENT, TOTAL MANUFACTURING	288.90	283.80	286.30	286.32	-2.25	-3.54
EMPLOYMENT, MANUFACTURING, DURABLE	161.70	157.80	161.00	160.43	-3.78	-6.45
EMPLOYMENT, MANUFACTURING, NON-DURABLE	127.20	126.00	124.50	125.90	-0.24	0.45
EMPLOYMENT, TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES	69.30	68.80	69.00	69.03	-1.99	0.88
EMPLOYMENT, WHOLESALE & RETAIL TRADE	270.20	263.60	262.90	265.57	-3.56	1.26
EMPLOYMENT, FINANCE, INSURANCE & REAL ESTATE (SIC 60-67)	50.40	50.80	50.20	50.47	-0.66	2.16
EMPLOYMENT, SERVICES (SIC 70-80)	205.20	205.00	207.40	205.87	-1.44	4.52
EMPLOYMENT, CIVILIAN GOVERNMENT	231.60	233.50	235.60	233.57	-0.75	1.89
EMPLOYMENT, STATE & LOCAL GOVERNMENT	192.50	194.50	195.20	194.07	0.05	3.36
HOURS AND EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING						
AVG WEEKLY HOURS, PROD WORKERS, TOTAL MANUFACTURING	39.10	38.80	38.80	38.90	-2.51	-1.35
AVG WEEKLY HOURS, PROD WORKERS, MANUFACTURING DURABLES	39.70	39.60	39.20	39.50	-2.47	-2.71
AVG WEEKLY HOURS, PROD WORKERS, NON-DURABLE MANUFACTURING	38.30	37.70	38.40	38.13	-2.56	-0.62
AVG HOURLY EARN, PROD WORKERS, TOTAL MANUFACTURING	6.98	6.97	7.11	7.02	1.20	7.01
AVG HOURLY EARN, PROD WORKERS, MANUFACTURING DURABLES	7.45	7.41	7.62	7.49	1.72	8.86
AVG HOURLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	6.33	6.37	6.42	6.37	-0.05	4.60
AVG WEEKLY EARN, PROD WORKERS, TOTAL MANUFACTURING	272.92	270.44	275.87	273.08	-1.34	5.56
AVG WEEKLY EARN, PROD WORKERS, MANUFACTURING DURABLES	295.77	293.44	298.70	295.97	-0.80	5.91
AVG WEEKLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	242.44	240.15	246.53	243.04	-2.60	5.24
INDEX OF PRICES RECEIVED BY KY FARMERS (1972=100)						
INDEX OF PRICES REC'D BY KY FARMERS, CROP AND LIVESTOCK PRODUCTS	171.75	171.10	162.24	168.36	-0.55	3.73
INDEX OF PRICES REC'D BY KY FARMERS, LIVESTOCK PRODUCTS	174.52	182.10	173.14	176.59	2.13	-3.28
INDEX OF PRICES REC'D BY KY FARMERS, CROPS	169.99	164.16	155.37	163.17	-2.28	9.09
MINING (MILLIONS OF TONS, THOUSANDS OF TAX DOLLARS)						
PHYSICAL OUTPUT OF COAL, EASTERN KENTUCKY - NOT SEAS ADJUSTED	7.03	7.20	10.36	24.59	-8.87	17.24
PHYSICAL OUTPUT OF COAL, WESTERN KENTUCKY - NOT SEAS ADJUSTED	3.01	3.14	4.25	10.41	-11.08	-3.52
AVG HOURLY EARN, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	10.74	10.97	11.49	11.07	3.14	11.00
AVG WEEKLY EARN, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	428.53	448.67	483.73	453.64	3.90	0.92
AVG WEEKLY HOURS, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	39.90	40.90	42.10	40.97	0.66	-9.10
TAX RECEIPTS, COAL SEVERANCE, CONSOLIDATED, TOTAL	21380.71	12955.59	13289.61	47625.91	*	7.40
CONSTRUCTION (MILLIONS OF \$, NO. OF PRIVATE RESID. UNITS--NOT SEAS ADJ.)						
VALUE OF CONSTRUCTION CONTRACTS, RESIDENTIAL & NON-RES	90.40	180.40	283.60	554.40	44.40	14.44
PERMIT AUTHORIZED CONSTRUCTION, NO. OF 1-FAMILY RESID. UNITS	397.00	245.00	359.00	1001.00	-34.23	-37.12
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, 1-FAMILY RESID. UNITS	15.18	10.26	14.94	40.38	-34.47	-30.95
PERMIT AUTHORIZED CONSTRUCTION, NO. OF RESID. UNITS, TOTAL	554.00	458.00	660.00	1672.00	-41.19	-28.15
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, ALL UNITS, TOTAL	20.32	13.98	22.77	57.08	-32.51	-21.66
ELECTRIC POWER SALES (MIL KWH)						
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST. INC. DOE	2970.80	2925.65	NA	NA	NA	NA
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST. EX.DOE	2174.94	2180.72	NA	NA	NA	NA
ELECTRICITY SALES, KWH, TO DEPARTMENT OF ENERGY	795.86	744.92	NA	NA	NA	NA
RETAIL SALES (000\$, 000 CARS)						
TAX RECEIPTS, GENERAL FUND, SALES AND GROSS RECEIPTS	76468.63	43542.67	63343.25	183354.44	*	-8.45
NEW PASSENGER CAR REGISTRATIONS, TOTAL, NOT SEAS. ADJ.	3.76	5.20	3.12	12.09	-64.32	-27.42
FINANCE AND INSURANCE (MILLIONS OF DOLLARS)						
NET LOANS MADE & ACQUIRED BY KY. SAVINGS & LOAN ASSOCIATIONS	19.35	18.83	29.62	67.80	-52.60	-30.61
SALES OF ORDINARY LIFE INSURANCE	313.00	338.59	402.31	1053.91	-10.23	10.12
SELECTED STATE GOVERNMENT RECEIPTS						
TAX AND NONTAX RECEIPTS, GENERAL FUND, TOTAL (MIL \$)	215.54	138.07	141.49	495.10	*	3.10
TAX RECEIPTS, GENERAL FUND, SALES & USE TAXES, TOTAL (THOU \$)	73418.06	40776.48	46440.17	160634.63	*	-9.31
TAX RECEIPTS, GENERAL FUND, INCOME TAX, INDIVIDUAL (THOU \$)	28566.69	58655.79	40837.49	128059.88	*	10.34
TAX RECEIPTS, GENERAL FUND, INCOME TAX, CORPORATION (THOU \$)	9541.23	3652.60	9863.55	23057.39	*	-11.60
TAX RECEIPTS, STATE ROAD FUND, STATE SHARE (THOU \$)	34181.05	26921.50	34742.25	95844.75	*	3.60
TAX RECEIPTS, STATE ROAD FUND, MOTOR FUELS NORMAL, TOTAL (THOU \$)	23700.39	14318.71	14461.22	52480.32	*	3.40
TAX RECEIPTS, STATE ROAD FUND, MOTOR VEHICLE USAGE TAX (THOU \$)	8183.98	6802.59	7625.05	22611.63	*	-8.07

PRIVATE SOURCES FOR THE ABOVE DATA INCLUDE:
 F. W. DODGE DIVISION (MCGRAW-HILL INFORMATION SYSTEMS COMPANY);
 VALUE OF CONSTRUCTION CONTRACTS;
 EDISON ELECTRIC INSTITUTE, ELECTRIC POWER SALES;
 LIFE INSURANCE MARKETING & RESEARCH ASSOCIATION;
 SALES OF ORDINARY LIFE INSURANCE;
 R. L. POLK & COMPANY, NEW CAR REGISTRATIONS

NA = NOT AVAILABLE AT PUBLICATION TIME;
 * = QUARTER TO QUARTER COMPARISONS NOT MEANINGFUL DUE TO SEASONAL VARIATION

Air Quality Improvement Programs in Kentucky

by Rose Marie Carr*

In recent months, the Inspection and Maintenance Program to reduce auto emissions in Jefferson County and Northern Kentucky (Boone, Campbell, and Kenton Counties) has been the subject of substantial debate and publicity. Interspersed with this debate have been statements concerning the economic impact of the air pollution regulations and of the sanctions that the United States Environmental Protection Agency (EPA) will impose if an Inspection and Maintenance Program is not established in these two areas of Kentucky.

This article will discuss the different aspects of the federal and state air quality improvement programs that have made the adoption of an Inspection and Maintenance Program in these two areas of Kentucky crucial. The most recent information will be provided concerning the economic sanctions that will be imposed by EPA if inspection and maintenance programs are not established, and the implications of these sanctions will be discussed.

The history of national air quality improvement programs spans approximately a twenty-five year period. In 1955 Congress enacted Public Law 84-159 creating the first formal federal air pollution control program within the Public Health Service. It authorized the agency to conduct research and training programs and to provide technical assistance to address health problems associated with air pollution. The Clean Air Act of 1963 broadened federal authority to include enforcement power in interstate problems and to provide financial assistance to state, local, and regional governments.

After successive amendments to the Clean Air Act throughout the 1960s, the federal government developed a new approach to air resource management. A systems approach was adopted which attempts to achieve maximum utilization of the atmosphere, without causing adverse effects on the environment. It begins with a determination of existing regional conditions—air quality, meteorological patterns, and an inventory of emissions. Next, goals for the air resource management program, or air quality standards, are developed. Air quality standards define the levels of pollutant concentration at which the health of the population will be protected with a margin of safety. Finally, a control strategy is designed for the achievement of the air quality standards. Ordinarily the mechanism employed in the control strategy is the application of emission standards to limit the poundage production of air pollutants from sources such as steel mills, automobiles, or burning trash.¹

**Rose Marie Carr is an Administrative Supervisor in the Division of Hazardous Material and Waste Management, Bureau of Environmental Protection, Kentucky Department for Natural Resources and Environmental Protection.*

Using these concepts of air resource management, the federal government designated air quality control regions throughout the country. Amendments to the Clean Air Act in 1970 mandated the establishment of national air quality standards, national emission standards for new sources of hazardous pollutants, and required states to develop statewide implementation plans to achieve the air quality standards in each control region. After the state air quality standards receive federal approval, the state adopts an implementation plan to achieve the goals defined by the standards.

The ambient air quality standards defined by EPA address the sources of air pollution and establish acceptable levels for six principal types of pollutants: particulate matter, sulfur dioxide, nitrogen dioxide, ozone, hydrocarbons and carbon monoxide. Two categories of air quality standards have been established. The primary category defines the level of pollution which, if exceeded, results in physical harm to human health; the secondary category establishes the maximum level of pollution possible if damage to plants, animals, and property is to be prevented.²

The Clean Air Act was further amended in 1977 because several air quality control regions had not attained the air quality standards by the deadline set in the 1970 legislation. The 1977 amendments require the identification of all non-attainment areas and require that each state revise its implementation plan with new strategies to attain the primary ambient air quality standards by December 31, 1982.

A chronology of air quality improvement programs in Kentucky shows that the initiative of the Kentucky General Assembly actually preceded that of the U.S. Congress. In 1952, KRS 77 recognized air pollution as a regional problem and authorized air pollution control districts to be activated in any county or group of counties. Under this legislation, the Air Pollution Control Board of Jefferson County was formed.

Following new legislation in 1966, a state Air Pollution Control Commission was created with broad authority to develop and conduct a comprehensive program to abate, prevent, and control air pollution. The first initiative of the Air Pollution Control Commission came in 1967 and required registration of air contaminant sources. During the next three years additional programs were developed which resulted in the adoption of statewide air quality standards.

In 1971, as a result of the 1970 amendments to the Clean Air Act, the EPA designated nine air quality control regions in Kentucky, encompassing all the counties. Shortly thereafter, the Commonwealth adopted and submitted its implementation plan to the EPA in accordance with the federal legislation. The Kentucky Implementation Plan was approved by EPA on May 31, 1972.

The Kentucky Department for Natural Resources and Environmental Protection replaced the Kentucky Air Pollution Control Commission in 1973. The department adopted the

national ambient air quality standards. The Implementation Plan was revised in 1975 after a reexamination of the sulfur dioxide control strategy to comply with EPA's Clean Fuel Policy.

On March 3, 1978 the EPA designated a number of areas in Kentucky as not having attained the primary air quality standards. These areas had already been identified by the Kentucky Department for Natural Resources and Environmental Protection. They are listed in the table.

AIR QUALITY NONATTAINMENT AREAS IN THE COMMONWEALTH OF KENTUCKY, 1977

Area	Pollutant
Bell County	Particulate Matter
Boone County	Oxidants
Boyd County	Particulate Matter, Sulfur Dioxide, Oxidants
Campbell County	Oxidants
Corbin, City of	Particulate Matter
Daviess County	Oxidants
Fayette County	Oxidants
Greenup County	Sulfur Dioxide
Hazard, City of	Particulate Matter
Henderson, City of	Particulate Matter, Sulfur Dioxide
Henderson County	Oxidants
Jefferson County	Particulate Matter, Sulfur Dioxide, Oxidants and Carbon Monoxide
Kenton County	Oxidants
Louisa, City of	Particulate Matter
McCracken County	Particulate Matter, Sulfur Dioxide, Oxidants
Marshall County	Particulate Matter
Muhlenburg County	Particulate Matter, Sulfur Dioxide
Newport, City of	Particulate Matter
Owensboro, City of	Particulate Matter, Sulfur Dioxide
Pikeville, City of	Particulate Matter
Richmond, City of	Particulate Matter
Shepherdsville, City of	Particulate Matter
Webster County	Sulfur Dioxide

SOURCE: Department for Natural Resources and Environmental Protection, 1977.

In response, the Commonwealth prepared an Implementation Plan which provides for achieving the ambient air quality standards in all the nonattainment locations with the exception of two urban areas—Jefferson County and Northern Kentucky (Boone, Campbell, and Kenton Counties)—by no later than December 31, 1982. An extension is necessary if these areas are to attain the standard for ozone and carbon monoxide.

EPA has made an extension of the 1982 deadline contingent upon the Commonwealth's commitment to implement a mandatory Inspection and Maintenance Program in those areas. As this article goes to press, the authority for this has not been obtained. Failure to obtain legal authority for a mandatory Inspection and Maintenance Program by July 1, 1980 will constitute failure to submit an essential element of the state Implementation Plan. It will also indicate to the EPA that sufficient progress is not being made by Kentucky to attain the ambient air quality standards deemed necessary to safeguard the health and welfare of the population in the two nonattainment areas.

The U.S. Congress has specified three types of sanctions that could be imposed upon a state if it does not have an approved air quality Implementation Plan by July 1, 1980. These are:

1. Prohibition of the construction and expansion of major sources of air pollution;
2. Withholding federal highway construction funds;
3. Withholding EPA construction grants for sewage treatment facilities.³

The first sanction prohibits the issuing of permits for major construction of facilities which are a potential source of air pollution, or, for modifications to existing facilities that are air pollution sources, in the nonattainment areas. For the local economy, this means there will be no major new development in these areas until an Inspection and Maintenance Program is implemented.

The second sanction directs that the U.S. Secretary of Transportation not approve any projects or award any grants under Title 23 other than for safety, mass transit, or transportation improvement projects related to air quality improvements or maintenance. Recent figures from EPA covering the funding period from July 1, 1980 through June 30, 1982, indicate that if sanctions are imposed on Kentucky, \$166,177,538 in state and federal highway funds will be affected. Forty-five highway projects, twenty-one in Jefferson County and twenty-four in Northern Kentucky may be delayed.⁴

The third sanction authorizes EPA to withhold construction grants for sewage treatment plants. If this sanction is imposed on Kentucky, EPA has indicated that \$17,155,850 in federal funds will be withheld in these areas. In Jefferson County a recycle sidestream reduction project with \$7,685,850 in federal money may be halted. Federal funds of \$1,500,000 for a sewer system rehabilitation project in the Campbell-Kenton County Sanitation District #1 may be withheld. A federal grant of \$7,970,000 to construct a new treatment plant and interceptor sewers for the City of Florence may be stopped. Total affected sewer treatment federal funds for Northern Kentucky are \$9,470,000.

The impact on the economy of the latter two sanctions is more clearly defined than that of the first sanction. Construction employment that would have been available through these funds will be delayed. Improved transportation routes and sewage treatment services will not be available as early as anticipated. Any regional economic activity that would have resulted from the multiplier effect of these funds will be postponed.

A number of control measures are already in effect in the two nonattainment areas. Polluting industries are making the necessary changes to reduce their emissions. Public transportation systems are being improved. Auto manufacturers have been required to meet stringent new car emission standards to guarantee that new automobiles will emit lower pollutant levels.

The largest single contributor to continuing air pollution in these two regions is the automobile and thus, an additional

(continued on page 11)

The Outlook for Kentucky Tax Revenues

by Lawrence K. Lynch*

A major concern during the 1980 session of the Kentucky General Assembly was whether tax revenues would be sufficient to fund existing programs and carry out the Governor's proposed economic development strategy. Of particular concern was the Transportation Fund, for which the major source of revenue is the gasoline tax. Gasoline tax revenues have been declining as consumers have reduced their use of gasoline in response to sharply higher prices.

In order to partially remedy this problem, the General Assembly enacted legislation to convert the gasoline tax from a specific 9 cents per gallon to an *ad valorem* 9 percent of the wholesale price. While a few other changes in tax laws were enacted, the gasoline tax change was the major modification in taxation enacted by the 1980 General Assembly.

Despite the changes in the gasoline tax, however, the outlook for Transportation Fund revenues during the next biennium is bleak. The General Fund, on the other hand, will fare reasonably well. These observations are based upon a set of revised revenue estimates generated by the author for the Kentucky Legislative Research Commission. The revenue estimates are based upon a statistical model described in the note at the end of this article.

The model was directly applied to KCEA projections of personal income of 13.34 percent in 1979, 10 percent in 1980, and 11.34 percent in 1981 for the sales and use tax, the individual income tax, the coal severance tax and other General Fund revenues. Because the author assumes some recessionary impact in 1980, the model was not consistently used for the corporation income tax nor the motor vehicle usage tax. Corporation income tax receipts were assumed to remain flat in the current fiscal year, and to grow by only 5 percent in fiscal 1980-81. For 1981-82, the model was used. Motor vehicle usage tax receipts were estimated to decline by 10.8 percent in fiscal 1979-80—consistent with actual receipts for the first three quarters—and then to grow as the model predicts.

Motor fuels tax receipts growth depends more upon the price elasticity of demand for gasoline, now that the tax has become *ad valorem*. During the 1973-74 to 1978-79 period, the quantity of gasoline purchased grew very slowly as the positive effect of population and income growth offset the negative effect of rising prices. The sharp price increases in the spring of 1979, however, resulted in a decline in gasoline purchases, and an expected decline in tax revenue for fiscal 1979-80. For this revenue estimate, it was assumed that the price elasticity of demand for motor fuels is equal to unity,

that is, gallons purchased decline by the same percentage that prices rise. However, population and income growth are expected to exert a positive effect on gallons purchased. The net result of both factors—declining purchases due to price increases and increasing purchases due to population and income growth—is expected to be positive growth of about 5 percent per year in gasoline tax revenues.

Other Transportation Fund revenues, chiefly license tax receipts of various kinds, are projected to follow their historic pattern of about 5 percent growth per year. Finally, the amounts of coal severance tax receipts to be transferred from the General Fund to the Transportation Fund for debt service on certain highway bond issues were determined by the Kentucky Department of Finance.

The revenue estimates for the current and the next two fiscal years, along with comparable 1978-79 data, are shown in the table on the following page. The General Fund is expected to grow slowly in 1979-80, due to the exemption of residential utility bills from the sales and use tax, and to no growth in corporation income tax receipts. In fiscal 1980-81 and 1981-82, the growth of General Fund receipts will accelerate and exceed the rate of growth of Kentucky Personal Income. Individual income tax receipts are expected to be the fastest growing component of the General Fund over the three-year period, followed by coal revenue tax receipts, and sales and use tax revenues (in fiscal years 1980-81 and 1981-82). By the second year of the next biennium, corporate income tax receipts are expected to resume strong growth, too.

The Transportation Fund is expected to remain nearly flat in 1979-80, due to declining receipts from motor fuels and motor vehicle usage taxes. Even with the change in the motor fuels tax to an *ad valorem* basis, the Transportation Fund will grow very slowly in the next biennium. The only Transportation Fund tax that responds well to income growth is the motor vehicle usage tax, which, after a sharp decline due to poor automobile sales in fiscal 1979-80, is expected to grow by 13.6 percent in fiscal 1980-81 and 15.4 percent in fiscal 1981-82. Receipts for other Transportation Fund taxes are expected to grow very slowly in the next biennium. It seems that the 1982 session of the Kentucky General Assembly will again be faced with the need to increase Transportation Fund tax bases or tax rates, or to enact new taxes.

Technical Note

The methodology employed to estimate receipts for most major Kentucky state taxes involved the statistical estimation of the historical relationships between tax revenues and personal income, and then utilized KCEA projections of personal income. Gasoline taxes, and various business and other taxes in the Transportation Fund, do not respond to changes in personal income, and were estimated by less rigorous techniques.

*Lawrence K. Lynch is Associate Professor of Economics and Chairman, Division of Administration and Economics, Transylvania University, Lexington, Kentucky.

GENERAL FUND AND TRANSPORTATION FUND TAX RECEIPTS
ACTUAL, FISCAL YEAR 1978-79
ESTIMATED, FISCAL YEARS 1979-80, 1980-81 AND 1981-82
(Millions of Dollars)

	Actual 1978-79	Estimated 1979-80	Percent Change	Estimated 1980-81	Percent Change	Estimated 1981-82	Percent Change
Sales and Use	599.2	603.8	0.8	658.9	9.1	727.1	10.3
Individual Income	456.3	551.5	20.9	637.8	15.6	751.0	17.7
Corporation Income	163.4	163.4	0.0	171.6	5.0	198.1	15.4
Coal Severance	156.3	180.1	15.2	200.6	11.4	226.5	12.9
Less Transfer	(14.5)	(32.6)	-	(43.8)*	-	(43.8)*	-
Other General Fund	340.5	372.9	9.5	399.5	7.1	431.9	8.1
Total General Fund	1,698.5	1,839.1	8.3	2,024.6	10.1	2,290.8	13.1
Motor Fuels	190.7	184.5	-3.2	193.7	5.0	203.4	5.0
Motor Vehicle Usage	111.5	99.4	-10.8	112.9	13.6	130.3	15.4
Coal Severance Transfer	14.5	32.6	-	43.8	-	43.8	-
Other Transportation Fund	55.7	58.5	5.0	61.4	5.0	64.5	5.0
Total Transportation Fund	372.4	375.0	0.7	411.8	9.8	442.0	7.3

*This estimate is based upon existing bond issues only, and reflects a reduction for earned interest.

The equation used to estimate revenues from the sales and use tax, the individual income tax, the corporation income tax, the coal severance tax, other General Fund revenues, and the motor vehicle usage tax was of this form:

$$T = aY^b$$

where, T = tax revenues, Y = Total Kentucky Personal Income, and a, b = constants estimated by the model. This form of model is described in Robert E. Berney and Bernard H. Frerichs, "Income Elasticities for State Revenues: Techniques of Estimation and Their Usefulness for Forecasting," *Public Finance Quarterly*, October 1973, pp. 409-425. It has the interesting property that the exponent, b, is the "income elasticity" of a particular tax—that is, b is the percent change in revenue for a one percent change in personal income.

The Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce was the source of personal income data for the period 1960-78. The Kentucky Department of Revenue was the source of tax receipts data for fiscal years 1960-61 through 1978-79. (These personal income and tax data are accessible in the Kentucky Economic Information System, KEIS). After experimenting with several lagged rela-

tionships, it was found that personal income for the calendar year ending in the middle of a fiscal year was the best predictor of tax revenue for the fiscal year.

The constants in each equation, i.e., the elasticity coefficients, were estimated by linear regressions on the logarithms of personal income and tax revenues. The r^2 s measure the percentage of total variation in tax revenues "explained" by personal income. When r^2 values are close to unity, the equation is said to provide a very good "fit" to the data, and may be considered an accurate estimator.

INCOME ELASTICITIES OF MAJOR KENTUCKY TAXES

Tax Source	Elasticity Coefficient	r^2
Sales and Use	.9122	.9911
Individual Income	1.5646	.9890
Corporate Income	1.3640	.9606
Coal Severance	1.1401	.8671
Other General Fund Revenues	.7144	.9922
Motor Vehicle Usage	1.3585	.9837

(continued from page 9)

step toward the reduction of the pollutants is the Inspection and Maintenance Program. A vehicle emission inspection and maintenance program reduces air pollution levels by requiring periodic testing of in-use-vehicle emissions and related maintenance for those vehicles which fail to meet prescribed inspection standards.

Debate continues on the question of how to resolve the dilemma surrounding inspection and maintenance programs in Jefferson County and in Northern Kentucky. Local officials in Northern Kentucky have raised questions concerning the method used to determine the nonattainment status in their area and may ask EPA to reevaluate the need for an Inspection and Maintenance Program. Jefferson County has proposed an ordinance to enforce an Inspection and Maintenance Program. Under this proposal, the inspection centers would be operated by the Kentucky Department for Natural Resources and Environmental Protection.

At this time, the final outcome is uncertain. Negotiations among EPA, the Kentucky Department for Natural Resources and Environmental Protection, and the affected local governments will continue until this problem is resolved and an acceptable program for achieving primary air quality standards is adopted.

Notes

¹ Kentucky Department for Natural Resources and Environmental Protection, Division of Air Pollution Control, *Revisions to the Implementation Plan for the Attainment and Maintenance of the National and State Ambient Air Quality Standards for the Commonwealth of Kentucky* (Frankfort, Kentucky), June 1979.

² Appendix A to the *Kentucky Administrative Regulations* 53:010, 1979.

³ *Federal Register*, "Rules and Regulations, Environmental Protection Agency," Vol. 45, No. 18 (Washington, D.C.), January 25, 1980.

⁴ The federal and state highway funds potentially affected if sanctions are imposed upon Kentucky are (a) Jefferson County—\$97,999,974 in federal funds and \$15,112,564 in state funds and (b) Northern Kentucky—\$46,292,500 in federal funds and \$6,712,500 in state funds.

KENTUCKY QUARTERLY ECONOMETRIC MODEL
A COMPARISON OF THE KENTUCKY CONTROL FORECAST OF MARCH 15, 1980
AND THE KENTUCKY ALTERNATIVE FORECAST OF MAY 25, 1980

These tables show the potential effect on Kentucky of a national recession by comparing the May 25, 1980 forecast shown on pp. 3-5 of this publication with the March 15, 1980 forecast presented in the *Kentucky Council of Economic Advisors Annual Report 1980*, pp. 35-38. The March 15, 1980 forecast assumes only a one quarter decline in the level of national economic activity.

	(Difference)							
	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4
Kentucky Personal Income (Millions \$)	-234.367	-310.109	-342.258	-459.652	-577.500	-750.453	-830.000	-796.371
Kentucky Real Personal Income (Millions \$)	-171.773	-273.016	-355.469	-454.637	-532.094	-645.645	-702.563	-700.633
Disposable Personal Income (Millions \$)	-182.793	-239.887	-258.156	-356.746	-451.715	-585.320	-631.887	-613.336
Total Tax & Non-Tax Payments, Kentucky (Millions \$)	-51.574	-70.222	-84.103	-102.906	-125.787	-165.133	-198.113	-183.035
State Tax & Non-Tax Payments (Millions \$)	-22.545	-30.385	-30.977	-33.874	-37.615	-45.370	-53.809	-53.774
Federal Tax & Non-Tax Payments (Millions \$)	-23.564	-32.407	-44.296	-57.193	-73.006	-99.384	-120.321	-105.713
Total Employment (Thousands)	-2.550	-8.702	-19.329	-29.203	-39.424	-49.068	-55.038	-53.497
Non-Agri. Wage & Salary Employment (Thousands)	-3.049	-8.659	-18.552	-28.112	-38.688	-49.137	-56.504	-56.933
Civilian Labor Force (Thousands)	-2.325	-8.287	-18.454	-27.515	-36.871	-45.731	-51.072	-49.225
Kentucky Unemployment Rate (Percent)	0.023	0.058	0.126	0.214	0.305	0.386	0.440	0.447

	(Percent Change)							
	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4
Kentucky Personal Income	-0.84	-1.10	-1.19	-1.56	-1.93	-2.46	-2.63	-2.46
Kentucky Real Personal Income	-1.08	-1.73	-2.25	-2.88	-3.39	-4.11	-4.42	-4.37
Disposable Personal Income	-0.76	-0.98	-1.03	-1.40	-1.74	-2.22	-2.32	-2.19
Total Tax & Non-Tax Payments, Kentucky	-1.40	-1.84	-2.18	-2.59	-3.09	-3.97	-4.61	-4.09
State Tax & Non-Tax Payments	-2.63	-3.42	-3.38	-3.56	-3.85	-4.54	-5.20	-4.98
Federal Tax & Non-Tax Payments	-1.01	-1.35	-1.84	-2.31	-2.88	-3.85	-4.52	-3.81
Total Employment	-0.17	-0.59	-1.32	-2.00	-2.69	-3.34	-3.72	-3.59
Non-Agri. Wage & Salary Employment	-0.25	-0.70	-1.52	-2.32	-3.19	-4.06	-4.65	-4.66
Civilian Labor Force	-0.15	-0.53	-1.18	-1.76	-2.36	-2.91	-3.23	-3.09

Kentucky Economy: Review & Perspective
Kentucky Council of Economic Advisors
451 Commerce Building 00341
University of Kentucky
Lexington, Kentucky 40506

U.S. Postage
PAID
Non-Profit Org.
Permit No. 51
Lexington, Ky.

ADDRESS CORRECTION REQUESTED

Jeannine Long
Congressional Information Service
7101 Wisconsin Avenue
Washington, D.C. 20014

DATED MATERIAL
PLEASE RUSH

2 53103-2 U A
10/21/80 L. Hultman

KENTUCKY ECONOMY

Review & Perspective

THE KENTUCKY COUNCIL OF ECONOMIC ADVISORS
University of Kentucky, Lexington, Kentucky 40506

September 1980
Vol. 4, No. 3

KCEA Review and Forecast

by Charles W. Hultman*

The major national economic forecasting services generally predict that economic activity will decline slightly through much of 1980 and that recovery will commence near the end of the year or the first part of 1981. For example, the Wharton Quarterly Model forecast, used as a basis for the Kentucky forecast, projects that real GNP will decline about 1.58 percent in 1980.3 but rise about .21 in 1980.4 as compared with the 9.04 percent decline in 1980.2. Real GNP will expand somewhat through 1981 and 1982. The unemployment rate will remain at a relatively high level—7.52 percent in 1980, 8.17 percent in 1981 and 7.74 percent in 1982.

As compared with the 1975 recession, more of the decline in real GNP in 1980 has been in consumer spending and residential construction. The inventory adjustment, which caused much of the 1975 downswing, is of much less current concern. Both the timing and speed of economic recovery will depend to a great extent upon consumer behavior in the months ahead.

Major changes in federal economic policy are not likely to be established or implemented at the national level until after the November elections. Statements of intended or planned policy may, of course, have an impact on activity in the private sector prior to that time. Both of the major candidates have announced plans for a tax cut. The Reagan proposal contains the largest tax cut to be extended over a 3-year period. The Carter proposal involves a smaller tax cut, but a proportionately larger share of the cut would accrue to low-income families.

An important and encouraging indication of economic recovery was the increase in July of the Composite Index of 12 Leading Indicators. The sharp increase in July—the biggest increase in five years—following a mild increase in June, is a reversal of the trend reflected for previous months. Economic recovery is expected to be a long, gradual process, with unemployment remaining above the average of the 1970s during much of the first half of the 1980s.

Recession has hit the Commonwealth harder than was generally expected would be the case. Kentucky's unemployment has been unusually high during the summer months as

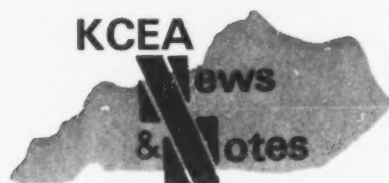
a result of the recession and students seeking summer employment. In absolute terms, the number of unemployed has exceeded the peak 1975 recession level of 120 thousand although, of course, the 1980 labor force is larger. The recession has centered largely on the construction and automobile industry; the major employment declines in Kentucky (in absolute terms) during the second quarter of 1980 have been in construction, transportation equipment, electric and electronic equipment, retail trade, state and local government (largely the education sector), and fabricated metal products. However, employment has decreased in all industries as compared with a year ago, with the exception of finance, insurance and real estate, and the services industry.

As described in other selections in this *Review and Perspective*, the decline has also reduced the expected level of tax revenues generated for use by state government. This, in turn, may cause curtailment of some programs and contribute at least slightly to higher unemployment in the state.

The Kentucky Quarterly Econometric Model (dated September 15, 1980) projects unemployment to be higher in both 1980 and 1981 than in 1979; the major employment gains in 1981 would occur in wholesale and retail trade and coal mining. Real personal income would remain about constant through 1980 and 1981, although economic activity would pick up in a significant fashion during the second quarter of 1981. Inflation will continue to be a problem although it will be somewhat less serious than that experienced during the past few years.

In summary, the Kentucky economy, much as the national economy, is expected to decline through much of 1980; gradual economic recovery would occur during the first part of 1981 although unemployment will remain relatively high. Subsequent developments will depend in large measure on policies initiated by the Administration following the November election. The two major presidential candidates have indicated that a tax reduction would be an appropriate action to stimulate the economy. Continuing inflationary pressure, however, limits the degree of freedom available for the implementation of new monetary and fiscal policies.

*Charles W. Hultman is the Chairman of the KCEA.



The KCEA and the Kentucky Department of Commerce have determined that because of financial constraints, the *Kentucky Personal Income Report* will not be published this year. In past years these two agencies combined resources to publish this report which reproduced county-level tables of disaggregated personal income for all of Kentucky's counties and Area Development Districts, based upon the most current data estimated by the Bureau of Economic Analysis, U.S. Department of Commerce. Anyone with access to the Kentucky Economic Information System (KEIS) can replicate any or all of the personal income tables by using program BEATAB. The county-level personal income data have been released through preliminary 1978 estimates; preliminary state-level personal income estimates for 1979 are scheduled for release in September and will soon be accessible in the annual bank (ABANK) of the KEIS. For further information please contact Margaret Adams, Manager of the KEIS.

* * *

KENTUCKY ECONOMY: Review & Perspective

Published by the
Kentucky Council of Economic Advisors
451 Commerce Building
University of Kentucky
Lexington, Kentucky 40506
(606) 258-4626

ISSN 0270-1421
OCLC: 5289744

Charles G. Renfro, Executive Director
Margaret O'Neill Adams, Editor

The *Kentucky Economy: Review & Perspective* is paid for with state funds and published by the Kentucky Council of Economic Advisors (KCEA). The KCEA is a state government agency, staff support for which is provided by the Center for Applied Economic Research, a unit of the Office for Research, College of Business and Economics, University of Kentucky.

This quarterly publication is intended, primarily, to provide forecasts and current information concerning the Kentucky economy. More generally it provides a forum for the publication of short, expository articles dealing with current research or information systems, the focus of which is some aspect of the Kentucky economy.

Articles submitted for publication should be sent to the Editor at the address given above. All submissions will be reviewed independently by persons recognized as knowledgeable in the specific subject discussed. However, the ultimate responsibility for content rests with the author.

Materials appearing in this publication may be reproduced without permission, although proper credit should be given to *Kentucky Economy: Review & Perspective* and its contributors for the use of any published material.

Subscriptions to this publication are available, without cost, upon request.

Frequently the staff of the KCEA receive inquiries from throughout the nation, as well as the Commonwealth, concerning the Kentucky Economic Information System (KEIS). Within recent months we have had letters from state officials in Arizona, Colorado, Delaware, Hawaii and Indiana concerning their interest in a state-based and supported information retrieval system for economic and other statistical data. The Employment Committee of the Victoria State government in Australia sent an economist to learn about the KEIS and its possible applications for government and academic purposes in Victoria, Australia. Most recently, a Scottish economist working on the Econometric Model of Scotland spent several days in residence with the staff of the KCEA, learning about the Kentucky Quarterly Econometric Model and the KEIS. In a related activity, Charles Renfro serves on the Model Review Group for the OKI Regional Econometric Forecasting Model sponsored by the Ohio-Kentucky-Indiana Regional Council of Governments.

* * *

Charles W. Hultman, Chairman of the KCEA, appeared with Secretary Grady Stumbo, Kentucky Department for Human Resources and Rick Crawford, Director of the Unemployment Insurance Division of DHR, before the Interim Joint Committee on Labor and Industry. The hearings, held on August 19, 1980, focused on the status of the Kentucky unemployment insurance program.

* * *

The sixth annual meeting of the Kentucky Economic Association will be held at the Harley Hotel in Lexington, October 10, 1980. Among the topics to be addressed are "Banking and Development"; "Demand Studies" considering estimates of mass transit and energy demand; and "Regional Development." Discussions are scheduled on such topics as "Productivity: Union vs. Non-Union," "Is Economics a Viable Undergraduate Major?," and "Coal's Future." The luncheon address will be given by Robert Mueller of Ashland Oil. In the afternoon, Alan Winger, Senior Vice-President of the Federal Home Loan Bank of Cincinnati will forecast the U.S. economy and Charles G. Renfro, Executive Director of the KCEA, will forecast and discuss the national and the Kentucky economies. The meeting is open to the public. For further information or to register, contact: Kris Hobson, KCEA (606) 258-4626.

* * *

Effective July 1, 1980, three KCEA staff members were promoted. Charles G. Renfro was named Executive Director, Roy A. Sigafus became Senior Scientific Analyst/Programmer and Elsie M. Youmans was named Data Analyst. Congratulations to all.

* * *

The July 1980 issue of *Growth and Change*, a quarterly publication of the College of Business and Economics, University of Kentucky, contains several articles of probable interest to our readers. Among these are an analysis of rural in-migration, an article on rural development, and a study of the efficacy of a program to develop Appalachian entrepreneurs. Subscriptions to *Growth and Change* may be obtained by writing the Associate Editor, 644 Maxwellton Court, Lexington, Kentucky 40506.

—moa—

Kentucky Econometric Model Forecast

by Charles G. Renfro*

This forecast for Kentucky is based upon the August 30, 1980 *Post-Meeting Control Forecast* made by the Wharton Econometric Forecasting Associates, using the Wharton Quarterly Econometric Model of the United States (Mark 5.8). The Wharton forecast is for a two quarter decline in real GNP beginning in the second quarter of 1980, followed by virtually no growth during the fourth quarter. The forecast suggests that the first quarter of 1981 will be the first recovery quarter, as measured by growth in real GNP. During the third and fourth quarters of 1980, the Wharton Associates expect higher consumer expenditures, but they also expect for these to be offset by declines in residential and nonresidential fixed investment, leading to very little, if any, growth in real final sales. They expect some inventory disinvestment in the last two quarters of 1980, which together with minimal growth in real final sales during these quarters, results in a recovery beginning only in early 1981.

The Wharton forecast also calls for a continued rise in the national unemployment rate to a peak of 8.3 percent in the fourth quarter of 1980. It projects rising interest rates through mid 1981. It also suggests an almost constant rate of inflation during both 1980 and 1981, as measured by the GNP Price Deflator. The percentage increase in the Consumer Price Index is projected to be 13.2 percent, on average, during 1980, but to decline to an average rate of 10.3 percent in 1981.

The implications for Kentucky of this national scenario is shown in the tables on this page and pages 4 and 5 to include a continued decline in nonagricultural wage and salary employ-

ANNUAL SUMMARY TABLE
SELECTED ECONOMIC INDICATORS

Description	1979	1980	1981
Personal Income (Millions)	26208.0	28697.4	31488.0
% Chg.: Ky. Personal Income	13.47	9.50	9.72
Real Personal Income (Millions 1972 \$)	16042.2	15903.9	15905.1
% Chg.: Ky. Real Personal Income	4.19	-0.86	0.01
Wage and Salary Disbursement	15818.5	17057.3	18654.5
Mfg. Wage & Salaries	4669.8	4986.0	5495.8
Non-Mfg. Wage & Salaries	11148.8	12071.3	13158.7
Non-Agri. Wage & Salary Employment (Thousands)	1240.5	1213.7	1224.0
% Chg.: Ky. Non-Agri. Employment	2.53	-2.16	0.86
Manufacturing Employment	294.4	285.7	289.4
Durable Goods	169.3	163.0	168.9
Non-Durable Goods	125.1	122.7	120.5
Non-Mfg., Non-Agri. Employment	946.1	928.0	934.6
Civilian Labor Force (Thousands)	1584.9	1569.1	1592.0
Ky. Unemployment Rate (%)	5.7	6.3	6.4

ment through the fourth quarter of 1980. This decline is the result of projected continued declines in both the manufacturing and nonmanufacturing components of nonagricultural wage and salary employment. In addition, whereas there is predicted continued growth in nominal Kentucky personal income in 1980, at an average rate of 9.5 percent, adjusted for inflation, personal income declines by almost 1.0 percent during the year. The unemployment rate is projected to peak at 6.6 percent during the fourth quarter of 1980 and the first quarter of 1981.

*Charles G. Renfro is Executive Director of the KCEA.

(continued on page 8)

QUARTERLY FORECAST TABLE
SELECTED ECONOMIC INDICATORS

Description	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4
Personal Income (Millions)	27880.9	28293.5	29176.4	29438.7	30117.0	30905.2	31982.9	32947.0
% Chg.: Ky. Personal Income	8.38	6.05	13.08	3.64	9.54	10.89	14.70	12.61
Real Personal Income (Millions 1972 \$)	16060.4	15850.7	15987.1	15717.4	15702.3	15784.0	15999.5	16134.7
% Chg.: Ky. Real Personal Income	-2.65	-5.12	3.49	-6.58	-0.38	2.10	5.57	3.42
Wage and Salary Disbursement	16800.5	16897.4	17196.6	17334.9	17839.2	18322.1	18910.2	19546.3
Mfg. Wage & Salaries	5037.6	4981.7	4948.8	4976.1	5267.3	5419.6	5567.7	5728.5
Non-Mfg. Wage & Salaries	11762.9	11915.7	12247.8	12358.8	12571.9	12902.5	13342.5	13817.8
Non-Agri. Wage & Salary Employment (Thousands)	1233.6	1217.2	1203.3	1200.5	1211.0	1219.6	1228.2	1237.4
% Chg.: Ky. Non-Agri. Employment	-1.96	-5.21	-4.49	-0.95	3.54	2.89	2.85	3.02
Manufacturing Employment	292.7	288.1	282.1	279.7	286.3	287.4	290.4	293.6
Durable Goods	164.9	164.1	161.6	161.3	166.1	167.5	169.6	172.3
Non-Durable Goods	127.9	123.9	120.5	118.3	120.2	119.9	120.8	121.3
Non-Mfg., Non-Agri. Employment	940.9	929.1	921.2	920.8	924.7	932.2	937.8	943.7
Civilian Labor Force	1589.0	1571.9	1558.5	1557.1	1571.2	1584.7	1598.4	1613.7
Ky. Unemployment Rate (%)	6.0	6.2	6.4	6.6	6.6	6.5	6.4	6.2

Forecast Date: September 15, 1980.

KENTUCKY QUARTERLY ECONOMETRIC MODEL

PERSONAL INCOME

DESCRIPTION	QUARTERLY								ANNUAL		
	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4	1979	1980	1981
PERSONAL INCOME (MILLIONS)	27890.9	28293.5	29176.4	29438.7	30117.0	30905.2	31982.9	32747.0	26208.0	28697.4	31488.0
WAGE & SALARY DISBURSEMENTS	16800.5	16897.4	17196.6	17334.9	17839.2	18322.1	18910.2	19546.3	15818.5	17057.3	18654.5
NON-AGRI. WAGES & SALARIES	16662.9	16759.2	17059.8	17199.4	17696.8	18172.8	18762.1	19398.8	15703.6	16920.3	18507.6
MANUFACTURING	5037.6	4981.7	4948.8	4976.1	5267.3	5419.6	5567.7	5728.5	4669.8	4986.0	5495.8
DURABLE GOODS	2870.6	2815.1	2920.9	2865.6	3094.6	3137.4	3236.6	3357.8	2709.2	2843.1	3206.6
NON-DURABLE GOODS	2167.0	2166.6	2127.8	2110.4	2172.7	2282.3	2331.0	2370.7	1960.6	2143.0	2289.2
MINING	1158.3	1286.7	1304.7	1302.9	1339.6	1392.5	1437.3	1493.8	1083.5	1263.1	1415.8
COAL MINING	1083.0	1205.4	1220.5	1216.8	1251.2	1301.8	1343.9	1396.9	1012.8	1181.4	1323.5
OTHER MINING	75.3	81.4	84.1	86.1	88.4	90.6	93.5	96.8	70.7	81.7	92.3
CONTRACT CONSTRUCTION	955.6	870.6	878.4	870.4	782.3	819.9	947.2	1121.2	962.5	993.8	917.6
REGULATED INDUSTRIES	1312.3	1324.2	1369.0	1376.4	1427.9	1431.2	1470.9	1510.4	1222.3	1345.5	1460.1
WHOLESALE & RETAIL TRADE	2556.1	2563.1	2643.0	2681.7	2798.8	2891.7	2991.3	3089.6	2480.7	2611.0	2942.9
SERVICES	2090.1	2162.3	2299.2	2336.1	2372.6	2479.3	2558.2	2619.6	1901.9	2221.9	2507.4
FINANCE, INS. & REAL ESTATE	603.7	603.6	620.1	620.0	655.7	659.0	679.0	684.6	556.4	611.9	669.6
GOVERNMENT	2949.2	2966.8	2996.6	3035.8	3052.7	3079.7	3110.5	3151.0	2826.4	2987.1	3098.5
CIVILIAN GOVERNMENT	2434.2	2444.8	2470.6	2503.8	2508.7	2518.7	2528.5	2564.0	2323.7	2463.4	2530.0
FEDERAL CIVILIAN	649.0	650.2	659.0	678.0	672.1	678.7	682.3	700.4	627.1	659.0	683.4
STATE & LOC. GOV'T	1785.2	1794.6	1811.6	1825.8	1836.6	1840.0	1846.2	1863.6	1696.6	1804.3	1846.6
FEDERAL MILITARY	515.0	522.0	526.0	532.0	544.0	561.0	582.0	587.0	502.8	523.8	568.5
AGRICULTURAL WAGE & SALARY	137.7	138.2	136.8	135.5	142.3	149.3	148.1	147.6	115.0	137.0	146.8
OTHER LABOR INCOME	2051.1	2087.3	2155.2	2196.2	2302.9	2406.7	2530.2	2663.2	1861.6	2122.5	2475.7
PROPRIETORS NET INCOME	2720.2	2535.0	2533.3	2547.2	2692.4	2791.0	2827.2	2891.5	2613.4	2583.9	2800.5
NON-FARM	2066.8	1908.8	1941.8	1987.2	2106.2	2181.4	2251.9	2330.3	1935.5	1976.1	2217.5
FARM	653.3	626.2	591.4	560.0	586.2	609.6	575.3	561.1	677.9	607.8	583.0
RESIDENCE ADJUSTMENT	292.5	294.0	298.2	302.5	312.8	320.6	325.9	331.7	269.6	296.8	322.7
OTHER INCOME ITEMS	7243.3	7696.3	8223.6	8284.2	8375.7	8500.3	8858.6	9015.1	6777.6	7861.9	8687.4
PROPERTY INCOME	3127.5	3430.4	3565.9	3526.9	3544.8	3577.9	3647.5	3719.8	2979.2	3412.7	3622.5
TRANSFER PAYMENTS	4115.8	4265.9	4657.7	4757.3	4830.9	4922.4	5211.1	5295.3	3798.5	4449.2	5064.9
LESS: PERSONAL CONTRIBUTIONS FOR SOCIAL INSURANCE	1226.8	1216.5	1230.4	1226.3	1406.0	1435.6	1469.2	1500.7	1132.9	1225.0	1452.9

FORECAST DATE: SEPTEMBER 15, 1980

KENTUCKY QUARTERLY ECONOMETRIC MODEL

EMPLOYMENT AND HOURS

DESCRIPTION	QUARTERLY								ANNUAL		
	1980.1	1980.2	1980.3	1980.4	1981.1	1981.2	1981.3	1981.4	1979	1980	1981
EMPLOYMENT (THOUSANDS)											
TOTAL EMPLOYMENT	1476.3	1457.4	1441.5	1437.9	1451.0	1464.9	1479.6	1496.1	1478.0	1453.3	1472.9
NON-AGRI. EMPLOYMENT	1384.9	1365.7	1350.2	1346.6	1359.2	1372.1	1387.2	1404.0	1390.6	1361.8	1380.6
WAGE & SALARY EMPLOYMENT	1233.6	1217.2	1203.3	1200.5	1211.0	1219.6	1228.2	1237.4	1240.5	1213.7	1224.0
MANUFACTURING	292.7	288.1	282.1	279.7	286.3	287.4	290.4	293.6	294.4	285.7	289.4
DURABLE GOODS	164.9	164.1	161.6	161.3	166.1	167.5	169.6	172.3	169.3	163.0	168.9
NON-DURABLE GOODS	127.9	123.9	120.5	118.3	120.2	119.9	120.8	121.3	125.1	122.7	120.5
MINING	54.4	53.7	53.5	53.9	55.3	56.7	57.7	58.9	54.8	53.9	57.1
COAL MINING	49.0	48.5	48.3	48.6	49.9	51.2	52.1	53.2	49.5	48.6	51.6
OTHER	5.3	5.2	5.2	5.3	5.4	5.5	5.6	5.7	5.2	5.2	5.6
CONTRACT CONSTRUCTION	66.5	59.3	55.4	51.0	52.0	54.8	57.1	56.9	69.0	58.0	55.2
REGULATED INDUSTRIES	69.5	70.0	68.6	67.6	66.5	67.2	67.9	68.8	70.4	68.9	67.6
WHOLESALE & RETAIL TRADE	260.8	257.3	258.2	261.9	265.9	269.6	273.5	277.5	269.8	259.5	271.6
SERVICES	210.3	212.7	212.0	213.9	214.3	215.7	215.8	216.7	204.5	212.2	215.6
FINANCE, INSURANCE & REAL ESTATE	49.3	47.8	46.1	46.2	47.0	46.7	46.3	46.2	49.7	47.3	46.6
GOVERNMENT	230.1	228.4	227.5	225.3	223.8	221.5	219.5	218.6	227.8	228.1	220.8
FEDERAL	39.0	39.0	39.0	39.0	38.0	38.0	38.0	38.0	39.0	39.0	39.0
STATE & LOCAL	191.1	189.4	188.5	187.3	185.8	183.5	181.5	180.6	188.8	189.1	182.8
EDUCATION	111.3	110.1	109.8	109.2	108.8	107.3	106.1	106.0	105.3	110.1	107.0
OTHER	79.8	79.3	78.7	78.1	77.0	76.2	75.4	74.6	83.5	79.0	75.8
ALL OTHER NON-AG EMPL	151.3	148.5	146.8	146.1	148.2	152.5	159.0	166.6	150.2	148.2	156.6
AGRICULTURAL	74.4	74.7	74.4	74.3	74.8	75.7	75.5	75.1	70.3	74.4	75.3
HIRED WORKERS	24.3	24.3	23.7	23.1	23.4	24.0	23.4	22.9	21.1	23.8	23.4
FAMILY & OTHER UNPAID	50.1	50.4	50.7	51.2	51.4	51.8	52.1	52.2	49.3	50.6	51.9
HOURS & MANHOURS											
AVERAGE WEEKLY HOURS											
DURABLE MANUFACTURING	40.7	40.1	39.2	39.5	39.9	40.3	39.9	39.9	40.1	39.9	40.0
NON-DURABLE MANUFACTURING	40.2	40.6	39.7	39.8	40.0	40.0	40.0	40.0	39.5	40.1	40.0
MANHOURS											
TOTAL MANUFACTURING	6163.0	6037.0	5781.3	5763.3	5945.9	6003.6	6034.5	6102.4	6099.1	5936.1	6021.6
DURABLE GOODS	3489.7	3420.1	3292.8	3314.7	3446.3	3509.9	3522.4	3578.7	3531.7	3379.3	3514.3
NON-DURABLE GOODS	2673.3	2616.8	2488.5	2448.6	2499.5	2493.7	2512.1	2523.7	2567.5	2556.8	2507.3
DAYS & MAN-DAYS											
COAL MINING DAYS WORKED	48.2	53.4	53.4	52.0	51.3	51.1	51.0	51.0	47.1	51.7	51.1
COAL MINING MAN DAYS	9459.0	10354.0	10310.9	10109.4	10224.0	10461.9	10621.1	10858.2	9339.7	10058.3	10541.3
LABOR FORCE											
RESIDENT ADJUSTED LABOR FORCE	1589.0	1571.9	1558.5	1557.1	1571.2	1584.7	1598.4	1613.7	1584.9	1569.1	1592.0
LABOR FORCE (NOT RES. ADJ.)	1572.0	1554.9	1541.5	1540.1	1554.2	1567.7	1581.4	1596.7	1567.9	1552.1	1575.0
UNEMPLOYMENT	95.7	97.5	100.0	102.2	103.2	102.8	101.7	100.6	89.9	98.8	102.1
UNEMPLOYMENT RATE (%)	6.0	6.2	6.4	6.6	6.6	6.5	6.4	6.2	5.7	6.3	6.4

FORECAST DATE: SEPTEMBER 15, 1980

selected indicators OF ECONOMIC A

These tables of selected indicators of economic activity were prepared by a special-purpose program of the Kentucky Economic Information System. The data in the tables are reported figures which were obtained from a variety of state and federal agencies, as well as from private firms.

Apr. 1980	May 1980	June 1980	Qtr. II 1980	% Chg. 80-I 80-II	% Chg. 79-II 80-II
--------------	-------------	--------------	-----------------	-------------------------	--------------------------

UNITED STATES DATA

CONSUMER PRICE INDEXES (1967=100, NOT SEASONALLY ADJUSTED)					
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ALL ITEMS	242.50	244.90	247.60	245.00	3.61 14.45
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), FOOD AND BEVER	242.80	244.10	245.70	244.20	2.14 7.14
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), HOUSING	257.90	261.70	266.70	262.10	4.52 17.76
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), APPAR & UPKEEP	177.30	177.50	177.20	177.33	2.52 7.00
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), TRANSPORTATION	246.80	249.00	249.70	248.50	4.00 19.62
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), MEDICAL	262.00	263.40	264.70	263.37	2.34 11.42
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), ENTERTAINMENT	202.50	204.00	205.30	203.93	3.05 8.76
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U), OTHER	209.80	211.20	212.50	211.17	1.64 8.92
CONSUMER PRICE INDEX (CPI-U), SPECIAL INDEX: ENERGY	358.80	363.20	367.80	363.27	6.06 38.58
PRODUCER PRICE INDEXES (1967=100, NOT SEASONALLY ADJUSTED)					
PRODUCER PRICE INDEX, ALL FINISHED GOODS	240.00	241.00	242.60	241.20	2.41 13.45
PRODUCER PRICE INDEX, FINISHED CONSUMER GOODS	241.60	242.80	244.50	242.97	2.39 14.88
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS	274.50	275.80	277.70	276.00	2.07 15.92
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS FOR MANUFACTURING	259.70	261.80	263.90	261.80	1.37 13.50
PRODUCER PRICE INDEX, CRUDE MATERIALS	296.90	300.70	299.50	299.03	1.28 6.14
PRODUCER PRICE INDEX, CRUDE FOODSTUFFS AND FEEDSTUFFS	235.50	242.90	242.50	240.30	-2.76 -4.08
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL, SPOT (1967=100)	393.60	394.70	394.50	394.27	0.86 0.56
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL, CONTRACT (JUNE 76=100)	131.30	131.80	132.50	131.87	1.05 3.89
CONSUMER PRICES: ENERGY (U.S. CITY AVERAGE)					
AVG PRICE FOR UTILITY (PIPED) GAS, PER 40 THERMS	16.33	16.92	16.99	16.75	4.58 19.99
AVG PRICE FOR UTILITY (PIPED) GAS, PER 100 THERMS	36.20	38.77	38.86	37.94	7.00 23.76
AVG PRICE FOR ELECTRICITY, PER 500 KWH	28.43	28.96	30.93	29.44	7.00 18.18
AVG PRICE FOR FUEL OIL #2 (HOME HEATING OIL), PER GALLON	1.01	1.01	1.02	1.01	4.33 52.51
AVG PRICE, GASOLINE, ALL TYPES, PER GALLON	1.24	1.24	1.25	1.24	5.84 50.30
AVG PRICE, GASOLINE, LEADED REGULAR, PER GALLON	1.21	1.21	1.22	1.21	5.72 51.45
AVG PRICE, GASOLINE, UNLEADED REGULAR, PER GALLON	1.26	1.27	1.27	1.27	5.82 49.16
AVG PRICE, GASOLINE, LEADED PREMIUM, PER GALLON	1.29	1.29	1.30	1.30	6.23 48.07
LABOR FORCE (SEASONALLY ADJUSTED)					
LABOR FORCE, CIVILIAN (MILLIONS)	104.42	105.14	104.54	104.70	0.49 2.29
EMPLOYMENT, TOTAL (MILLIONS)	97.15	96.99	96.54	96.89	-0.93 0.44
EMPLOYMENT, AGRICULTURE	3.24	3.38	3.19	3.27	-1.43 1.11
EMPLOYMENT, NONAGRICULTURAL INDUSTRIES	93.91	93.61	93.35	93.62	0.91 0.42
UNEMPLOYMENT RATE, TOTAL	7.00	7.80	7.70	7.50	22.28 30.06
UNEMPLOYMENT RATE, BLACKS & OTHER RACIAL MINORITIES	12.60	13.90	13.60	13.37	14.25 16.57
OTHER SELECTED NATIONAL INDICATORS:					
U.S. GROSS NATIONAL PRODUCT (B \$) (% CHG AT ANNUAL RATE)	NA	NA	NA	2521.30	0.08 8.22
U.S. REAL GROSS NATIONAL PRODUCT (B 72*) (% CHG AT ANNUAL RATE)	NA	NA	NA	1408.60	-9.63 -0.96
PERSONAL INCOME, TOTAL, SEASONALLY ADJUSTED (B \$)	2071.50	2078.10	2089.00	2079.50	1.07 9.88
COMPOSITE INDEX OF 12 LEADING INDICATORS (1967=100)	126.10	123.20	125.00	124.77	-6.54 -11.58
INDEX OF INDUSTRIAL PRODUCTION, SEASONALLY ADJUSTED (1967=100)	148.20	144.30	141.00	144.50	-5.06 4.09
INTEREST RATE, YIELD ON 3 MONTH TREASURY BILLS	14.00	9.15	7.00	10.05	-25.33 7.22
PRIVATE RESIDENTIAL BLDG. 16000 PERMIT ISSUING PLACES (SABJ THOU)	789.00	825.00	1078.00	2692.00	-20.99 -44.32
TOTAL INSTALLMENT CREDIT OUTSTANDING AT END OF MONTH (B \$)	306.13	303.76	301.38	303.76	-1.46 5.75

KENTUCKY DATA

	Apr. 1980	May 1980	June 1980	Qtr. II 1980	% Chg. 80-I 80-II	% Chg. 79-II 80-II
LABOR FORCE (NOT SEASONALLY ADJUSTED, THOUSANDS)						
LABOR FORCE, TOTAL CIVILIAN	1577.50	1581.60	1605.00	1588.03	-0.35	1.38
EMPLOYMENT, TOTAL, BY PLACE OF RESIDENCE	1479.00	1480.10	1481.00	1480.30	0.14	0.57
EMPLOYMENT, AGRICULTURAL	60.60	60.50	62.00	70.63	17.78	-1.49
EMPLOYMENT, TOTAL NON-AGRICULTURAL	1418.40	1411.60	1399.00	1409.67	-1.21	-0.52
UNEMPLOYMENT RATE	6.20	6.40	7.70	6.74	-6.94	35.95
EMPLOYMENT, TOTAL NON-AGRICULTURAL WAGE AND SALARY	1223.70	1221.10	1203.60	1216.13	-0.52	-3.15
EMPLOYMENT, BITUMINOUS COAL & LIGNITE MINING (SIC 12)	49.10	47.10	47.20	47.80	-1.92	-3.50
EMPLOYMENT, CONTRACT CONSTRUCTION	60.30	59.10	61.20	60.20	3.91	-17.68
EMPLOYMENT, TOTAL MANUFACTURING	200.90	279.80	268.00	276.50	-3.43	-7.44
EMPLOYMENT, MANUFACTURING, DURABLE	157.60	157.10	146.10	153.60	-4.26	-11.42
EMPLOYMENT, MANUFACTURING, NON DURABLE	123.30	122.70	122.70	122.90	-2.38	-1.94
EMPLOYMENT, TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES	68.90	68.90	69.20	69.00	-0.05	-2.31
EMPLOYMENT, WHOLESALE & RETAIL TRADE	260.90	261.90	260.60	261.13	-1.67	-2.03
EMPLOYMENT, FINANCE, INSURANCE & REAL ESTATE (SIC 60-67)	50.30	50.60	50.90	50.60	0.26	0.13
EMPLOYMENT, SERVICES (SIC 70-80)	211.20	214.20	214.00	213.13	3.53	3.50
EMPLOYMENT, CIVILIAN GOVERNMENT	237.00	234.10	226.00	232.37	-0.51	-0.23
EMPLOYMENT, STATE & LOCAL GOVERNMENT	196.10	192.20	193.50	190.60	-1.79	-0.92
HOURS AND EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING						
AVG WEEKLY HOURS, PROD WORKERS, TOTAL MANUFACTURING	38.80	38.40	38.70	38.63	-0.69	-1.28
AVG WEEKLY HOURS, PROD WORKERS, MANUFACTURING DURABLES	39.30	37.90	38.70	38.63	-2.19	-2.52
AVG WEEKLY HOURS, PROD WORKERS, NON-DURABLE MANUFACTURING	38.20	39.00	38.60	38.60	1.22	0.35
AVG HOURLY EARN, PROD WORKERS, TOTAL MANUFACTURING	7.21	7.25	7.27	7.24	3.10	7.47
AVG HOURLY EARN, PROD WORKERS, MANUFACTURING DURABLES	7.66	7.73	7.79	7.73	3.11	9.39
AVG HOURLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	6.60	6.63	6.62	6.62	3.82	4.97
AVG WEEKLY EARN, PROD WORKERS, TOTAL MANUFACTURING	279.75	278.40	281.35	279.83	2.47	6.08
AVG WEEKLY EARN, PROD WORKERS, MANUFACTURING DURABLES	301.04	292.97	301.47	298.49	0.85	6.61
AVG WEEKLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	252.12	258.57	255.53	255.41	5.09	5.33
INDEX OF PRICES RECEIVED BY KY FARMERS (1972=100)						
INDEX OF PRICES REC'D BY KY FARMERS, CROP AND LIVESTOCK PRODUCTS	164.85	163.99	165.76	164.87	-4.01	-7.93
INDEX OF PRICES REC'D BY KY FARMERS, LIVESTOCK PRODUCTS	153.92	151.51	155.99	153.77	-12.92	18.95
INDEX OF PRICES REC'D BY KY FARMERS, CROPS	171.74	171.80	171.88	171.81	1.84	0.31
MINING (MILLIONS OF TONS, THOUSANDS OF TAX DOLLARS)						
BITUMINOUS COAL & LIGNITE, PHYSICAL OUTPUT, EASTERN KY, TOTAL	9.30	8.89	9.40	27.58	26.53	-2.23
BITUMINOUS COAL & LIGNITE, PHYSICAL OUTPUT, WESTERN KY, TOTAL	3.59	3.92	3.53	11.04	2.74	4.76
AVG HOURLY EARN, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	11.49	11.30	11.35	11.38	2.03	3.99
AVG WEEKLY EARN, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	448.11	461.04	474.43	461.19	1.66	-1.36
AVG WEEKLY HOURS, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	39.00	40.80	41.80	40.53	-1.06	-5.07
TAX RECEIPTS, COAL SEVERANCE, CONSOLIDATED, TOTAL	16510.31	14606.72	15496.68	47721.71	*	11.46
CONSTRUCTION (MILLIONS OF \$, NO. OF PRIVATE RESID. UNITS—NOT SEAS ADJ)						
VALUE OF CONSTRUCTION CONTRACTS, RESIDENTIAL & NON-RES	112.70	137.40	140.10	390.20	37.39	-16.12
PERMIT AUTHORIZED CONSTRUCTION, NO. OF 1-FAMILY RESID. UNITS	394.00	480.00	542.00	1506.00	50.45	-49.12
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, 1-FAMILY RESID. UNITS	16.45	18.60	26.46	61.50	52.30	-47.32
PERMIT AUTHORIZED CONSTRUCTION, NO. OF RESID. UNITS, TOTAL	669.00	1001.00	1179.00	2849.00	70.39	30.95
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, ALL RESID. UNITS, TOTAL	24.44	25.71	39.70	89.86	57.44	-36.16
ELECTRIC POWER SALES (MIL KWH)						
ELECTRICITY SALES, COMMERCIAL & INDUSTRIAL TOTAL	3241.58	3278.90	2982.01	9502.48	4.39	-2.37
ELECTRICITY SALES, COMMERCIAL & INDUSTRIAL EXCL TO PAD DIFF PLANT	2032.24	1998.50	2054.96	6085.69	6.66	-2.36
ELECTRICITY SALES TO PADUCAH GASEOUS DIFFUSION PLANT, TOTAL	1209.34	1280.40	927.05	3416.80	32.27	-2.38
RETAIL SALES ('000\$, '000 CARS)						
TAX RECEIPTS, GENERAL FUND, SALES AND GROSS RECEIPTS	52836.84	55291.76	67591.56	175720.13	*	0.65
NEW PASSENGER CAR REGISTRATIONS, TOTAL, NOT SEAS. ADJ.	6.09	4.38	6.42	16.89	39.70	-62.17
FINANCE AND INSURANCE (MILLIONS OF DOLLARS)						
NET LOANS MADE & ACQUIRED BY KY. SAVINGS & LOAN ASSOCIATIONS	21.31	15.20	22.72	59.22	-12.66	-70.65
SALES OF ORDINARY LIFE INSURANCE	415.66	395.55	365.00	1176.21	11.60	10.48
SELECTED STATE GOVERNMENT RECEIPTS						
TAX AND NONTAX RECEIPTS, GENERAL FUND, TOTAL (MIL \$)	126.61	146.00	192.05	454.66	*	3.26
TAX RECEIPTS, GENERAL FUND, SALES & USE TAXES, TOTAL (THOU \$)	49213.29	49203.82	52333.45	150750.50	*	-0.93
TAX RECEIPTS, GENERAL FUND, INCOME TAX, INDIVIDUAL (THOU \$)	25778.34	50149.78	34145.25	118073.31	*	4.47
TAX RECEIPTS, GENERAL FUND, INCOME TAX, CORPORATION (THOU \$)	16868.53	6284.41	44398.60	67551.50	*	-1.17
TAX RECEIPTS, STATE ROAD FUND, STATE SHARE (THOU \$)	33329.36	25835.38	25658.75	84823.44	*	-17.12
TAX RECEIPTS, STATE ROAD FUND, MOTOR FUELS NORMAL, TOTAL (THOU \$)	14043.23	15187.55	16043.04	45267.82	*	-8.17
TAX RECEIPTS, STATE ROAD FUND, MOTOR VEHICLE USAGE TAX (THOU \$)	8326.89	7537.53	7372.25	23236.68	*	-28.64

PRIVATE SOURCES FOR THE ABOVE DATA INCLUDE:

F. W. DODGE DIVISION (MCGRAW-HILL INFORMATION SYSTEMS COMPANY),

VALUE OF CONSTRUCTION CONTRACTS;

EDISON ELECTRIC INSTITUTE, ELECTRIC POWER SALES;

LIFE INSURANCE MARKETING & RESEARCH ASSOCIATION,

SALES OF ORDINARY LIFE INSURANCE;

R. L. POLK & COMPANY, NEW CAR REGISTRATIONS

* = QUARTER TO QUARTER COMPARISONS NOT MEANINGFUL DUE TO SEASONAL VARIATION

(continued from page 3)

In fact, it now appears that the U.S. economy has experienced only a one quarter real GNP decline in 1980 (specifically during the months from March through June), as was predicted in the 1980 *Annual Report* of the Kentucky Council of Economic Advisors. The second quarter decline was more substantial than was expected in March, a real GNP decline of 9.6 percent. This is a record for the post World War II period and, in the magnitude of the decline, largely reflects the credit restricting monetary policies announced March 14, 1980. What appears to have occurred is a nearly simultaneous reaction to the credit restriction measures by both consumers and businesses during the March to June period. However, with the decline in interest rates since May and the lifting of the credit restrictions, housing starts, automobile purchases, and employment all began to increase again. Except for the fact that interest rates also began to increase once more during the third quarter of 1980, the outlook unmistakably would be for a recovery beginning in third quarter of 1980 and continuing into 1981.

Given the actual performance of the U.S. economy during the third quarter of 1980, the Wharton forecast and the complementary forecast for Kentucky that is given in the tables on pages 3-5 should be regarded as being somewhat more pessimistic in tone than what is likely to occur. The very weak growth predicted by the Wharton Associates to occur in the fourth quarter of 1980 is actually likely to occur in the third quarter and to be followed by more robust growth in the next quarter. This backward shift is also present in the Kentucky forecast. It is much more likely that the fourth quarter of 1980 will be characterized by employment growth in Kentucky than by the decline shown in the tables. This Kentucky forecast should be interpreted simply as indicating the effect on Kentucky if the August 30 Wharton national forecast were to be realized.

The outlook for the United States, and hence Kentucky, during the next three or four quarters is clouded by two uncertainties in particular. The first is the monetary policies that will be pursued by the Federal Reserve Board. The rise in interest rates since July, including an increase in both prime and mortgage rates, to some degree reflects loan demand, including U.S. government borrowing, but it apparently also reflects Federal Reserve Board policies. The July 24, 1980 statement by Paul A. Volcker before the U.S. Senate Budget Committee, for example, indicates the Board's continued concern about fighting inflation.¹ Some economists feel that a renewed recession is possible as a result of current monetary policies; this is not that likely, but the possibility cannot be dismissed.

The second uncertainty is the proposed tax cut for 1981. The Wharton forecast incorporates the assumption of a tax cut of approximately \$27 billion, with half going to individuals and half to businesses. Wharton projects this tax cut to take effect at the beginning of 1981. This assumption is based upon the fact that both major candidates and several congressional

groups have endorsed a reduction in taxes in 1981, in the range of \$25 to \$35 billion. The tax cut will have a stimulative effect on the economy, but in conjunction with the somewhat restrictive set of monetary policies, the net result is also likely to be higher interest rates than otherwise.

The apparent policies of the Federal Reserve Board and the proposed fiscal policies are contradictory. But in addition, the performance of the economy during the next three to six months will undoubtedly have an effect on the policies that are pursued in early 1981. Stronger economic performance in the second half of 1980 than indicated by the Wharton forecast is likely to result in a lessening likelihood of a tax cut in early 1981 and continued active restraint in monetary policies. Weaker economic performance could lead both to increased calls for a tax cut and some relaxation in the monetary policies pursued. These considerations suggest, at best, a rather sluggish recovery during the next few quarters, in terms of the average rate of real GNP increase.

In general, during the next six to eight quarters, the performance of the Kentucky economy is likely to reflect that of the United States economy. Home appliances and automobile parts account for a significant proportion of the manufacturing output of Kentucky, so that Federal Reserve Board monetary policies and the general performance of the United States economy will be important as determinants of the level of production in Kentucky.

However, Kentucky is also a coal producing state—the leading coal producing state—and the performance of this industry may not simply reflect U.S. economic activity levels. Recently, there have been layoffs in Kentucky coal mines; in a number of instances, the layoffs have been the result of slack demand for steel, hence metallurgical coal. The soon-to-be implemented Kentucky Permanent Regulatory Program may also have some negative effect on employment, because of its effect on small operators. There is also the possibility of a winter strike, because of the United Mine Workers' contract renewal. But at the same time, considering the next year or two, there are several reasons to expect a net increase in mining employment. The regulatory program will affect the employment of operators who stay in business, for it will require coal producers to hire additional technically qualified people. The conversion from oil to coal-fired generation of electricity in the northeastern states, to the extent that this occurs, will increase coal production. Similarly, strong foreign demand for U.S.-produced coal is likely to have both direct and indirect effects on the Kentucky industry. Finally, to the extent that there is national economic recovery, the resultant greater industrial and consumer demand for electricity will increase the demand for coal. The Kentucky forecast indicates some decline in coal mining employment between 1979 and 1980, but it also predicts renewed employment gains in 1981.

Considering the state of Kentucky alone, the forecast given in the tables defines a level of economic performance that the actual performance of the state economy should at least equal. The danger on the horizon is the possibility of monetary policies that cause a resumed decline in economic growth; but in the absence of the implementation of such policies, recovery can be expected in late 1980 and into 1981.

¹Paul A. Volker, "Statement before the Budget Committee, U.S. Senate, July 24, 1980," *Federal Reserve Bulletin*, August 1980, pp. 636-640.

Technical Note:

The Kentucky forecast tables on pages 3-5 have two characteristics that should be noted. The first is that for 1979, as well as for 1980 and 1981, all of the numbers in the tables are forecasts. Some data are available on the performance of the Kentucky economy during 1979, but not a sufficient amount to allow this year to be taken as given. As a result, it has been necessary to begin the forecast period with the first quarter of 1979, taking account of those observations on economic variables that are already available, although none are used directly in the forecasts. Thus, even though the only quarterly numbers shown in the forecast tables are those for 1980 and 1981, the forecasts were actually made for the entire period from the first quarter of 1979 through the fourth quarter of 1981.

The second characteristic of the tables is that the figures shown for the labor force, total employment, unemployment, and the unemployment rate are not exactly comparable in concept with those published by the Kentucky Department for Human Resources. The Department for Human Resources is required to construct their estimates in accordance with a standard methodology laid down by the Bureau of Labor Statistics, U.S. Department of Labor. This methodology involves the use of the Current Population Survey, U.S. Bureau of the Census, to arrive at estimates for these quantities that are independent of the employment results for the individual industries. In contrast, the Kentucky model forecasts are made by summing the forecasted industry employment figures and then adjusting for net out-of-state commuting by Kentucky residents.

Editor's Note: In the June issue of this quarterly we published estimates of Kentucky revenue made by Lawrence K. Lynch on behalf of the Kentucky Legislative Research Commission. In this issue we are publishing an article which describes the revenue estimates made by the staff of the Kentucky Department of Revenue for fiscal 1980-81, as well as an article in which Dr. Lynch sets forth revisions to his earlier forecast. The forecast tables published with both articles here were the basis for the testimony given by Robert Allphin, Commissioner of the Kentucky Department of Revenue and by Dr. Lynch, at a meeting of the Kentucky Legislature's Joint Committee on Appropriations and Revenues, July 29, 1980.

Kentucky Revenue 1980-81: Estimates and Economic Assumptions

by Richard Thalheimer and William B. Gardner II*

The Kentucky Department of Revenue has fundamentally altered its basic assumptions concerning fiscal 1980-81 as a result of its analysis of the unanticipated severity of the current national economic downturn. Specifically, fiscal 1980-81 is no longer perceived as being strictly a recovery year. We assume that the national economy will continue to decline in the first two quarters of the fiscal year, but at a much lower rate than the decline experienced in the last quarter of fiscal 1979-80. Improvements in real economic growth, controlled for price inflation, should begin toward the end of the second quarter of the fiscal year, but real growth for the entire fiscal year will only be level or slightly positive, at best.

Based upon current information, Kentucky personal income is estimated to increase at about a 10% rate over the fiscal year, and this should produce the Revenue Department's forecasted 14.7% increase in personal income tax revenues. A federal tax cut is anticipated in 1981 but its potential effect on receipts should be minimized because of the time lag which will occur before this federal action can have a stimulatory impact on the Kentucky economy. Because of employee layoffs in 1980, there will be an increase in personal income tax refunds at the end of the fiscal year but the impact of this on the General Fund will be somewhat moderated by the lack of carryover tax refunds from fiscal 1979-80. Because of improved processing of income tax returns most 1979 refunds were paid in fiscal 1979-80.

General Sales and Use Tax receipts should increase moderately, primarily reflecting continuing inflation. We expect that at the bottom of a recession the demand for consumer durables will continue to be sluggish as households will generally tend to increase their savings rather than take on additional debt to finance expenditures. We anticipate a gradual increase in new housing construction due to an easing of credit restrictions and a decline in mortgage interest rates. Improvement will be slow in this sector due to builders' large inventories and to continued uncertainty about the economy. The recent exemption of residential utilities from the tax base also contributes to the slower increase in the General Sales and Use Tax for fiscal 1980-81.¹

The increasingly heterogeneous mix of Kentucky's industrial base makes it more parallel to that of the nation and indicates that corporate income tax receipts will not be as insulated from vagaries in the national economy as before. The quarterly ratios of national corporate profits before taxes to Kentucky corporate profits before taxes illustrates the remarkably stable nature of this relationship in recent years.² The national forecasting services (Wharton and Data Resources, Inc.) expect that U.S. corporate profits will be down 15-20% in fiscal 1980-81. A decline in Kentucky corporate profits is anticipated as well, but should be somewhat more stable due to the large size of Kentucky's energy sector.³

The market for coal is not expected, however, to improve dramatically. A 5% rate of growth in price and a 2% increase in production is forecasted.⁴ Domestic coal markets are too soft to allow a more optimistic forecast, particularly for metallurgical coals. While President Carter has initiated steps to increase the nation's reliance on coal, these actions are seen as

*Richard Thalheimer is Director of Research and William B. Gardner II is Research Advisor, both of the Kentucky Department of Revenue.

having little impact in 1980-81. The increase in the oil production tax rate from $\frac{1}{2}\%$ to $4\frac{1}{2}\%$ is expected to help revenues significantly. Coupled with an anticipated price increase of 15% (to \$43.70 a barrel) and a 6% growth in production (to 6.04 million barrels), this tax should now yield approximately \$12 million annually.

The minerals severance tax on natural gas production is expected to reach \$4.2 million in 1980-81 as originally projected. The new severance tax on all remaining minerals has been revised down from \$9.2 million to \$5 million because the reporting procedures stipulate that existing inventories must be consumed before new production is taxed. In addition, transportation costs (excluded from this tax) now appear to be a much larger component of other minerals' value than was anticipated when the original estimate was made.

Increasing energy costs have caused problems for two major Transportation Fund accounts. Increased conservation and rising prices have decreased gasoline sales. A further reduction of 1.2% in gallonage is anticipated for 1980-81. The slackening demand has also retarded growth of the wholesale price of gasoline. The wholesale price is not expected to pierce the \$1.00 floor until the third quarter of the fiscal year, thus minimizing the impact of the recent revision in the gasoline tax rate from 9 cents per gallon to 9% of the wholesale price. Failure by the U.S. Congress to pass the 10 cents federal import tax is also a factor in the overall revision of anticipated tax receipts.⁵

Finally, the marked slowdown in automobile sales observed thus far in 1980 is expected to continue throughout fiscal 1980-81. We assume a 10% decrease in automobile sales and an 8% increase in price, similar to that predicted for the national economy, for a net reduction of 2% in motor vehicle usage tax receipts.⁶

The forecasts presented here are made under the general assumption that processing and enforcement of individual taxes will proceed at their normal pace. The following table

gives the revenue estimates for taxes in each fund, along with a calculation of the projected percent growth of each tax compared to the receipts for 1979-80.

Notes

¹ The General Sales and Use Tax forecast was generated by using a univariate Box-Jenkins time series model fit to monthly receipts data. The data were adjusted for exemptions of food and utilities. Sales tax on utilities was forecast using price information from the Wharton and DRI national econometric model forecasts.

The individual income tax was forecast using a univariate Box-Jenkins time series analysis forecast model fit to quarterly net receipts data, where net receipts are defined as withholding plus declarations plus final payments less refunds.

² Quarterly Ratios of Corporate Profits Before Taxes:
U.S. to Kentucky

Year	I	II	III	IV
1976	.007	.003	.005	.005
1977	.008	.002	.005	.005
1978	.008	.003	.005	.006
1979	.007	.003	.006	.006

³ We were unable to fit a statistical model to the highly volatile quarterly corporation income tax receipt series. This tax was forecast using the historical ratios outlined above (Note 2). Kentucky's distribution of the corporation income tax mix by Standard Industrial Classification was also considered.

⁴ The coal severance tax was forecast using separate forecasts of monthly price and output series. A price index was constructed from a sample of 30 companies producing in Kentucky over a 35-month period using severance tax filing information. A Holt-Winters univariate time series smoothing model was used to generate the base forecast. Coal output was forecast using a 95-month series for Kentucky generated by the U.S. Department of Energy. A classical decomposition time series model was fit to the data. The percent increase in both price and output was applied to the 1979-80 collection figure to obtain the 1980-81 forecast.

⁵ The motor fuels tax, a major component of the Transportation Fund, was forecast using separate price and consumption (net taxable gallonage) estimates. Gallonage was forecasted using 182 monthly

GENERAL FUND AND TRANSPORTATION FUND TAX RECEIPTS ACTUAL, FISCAL YEAR 1979-80 DEPARTMENT OF REVENUE ESTIMATES, FISCAL YEAR 1980-81 (Millions of Dollars)

	Actual 1979-80	Estimated 1980-81	Percent Change		Actual 1979-80	Estimated 1980-81	Percent Change
General Fund				Transportation Fund			
Sales and Use	607.3	652.0	7.4	Motor Fuels Normal ²	187.1	185.0	(1.1)
Individual Income	505.8	580.0	14.7	Motor Vehicle Usage ³	97.1	95.7	(1.4)
Corporation Income	158.8	150.0	(5.5)	Coal Severance Transfer ⁴	32.6	42.3	-
Coal Severance	176.4	188.8	7.0	Other Transportation Fund	54.8	47.0	(14.2)
Less Transfer	(32.6)	(42.3)					
Other General Fund ¹	366.3	392.5	7.2				
Total General Fund	1,782.0	1,921.0	7.8	Total Transportation Fund	371.6	370.0	(0.4)

¹ Individual estimates are made for each tax comprising this Fund.

² Includes Motor Fuels Normal Use tax of \$7.4 million in 1979-80 and estimated \$8.0 million in 1980-81.

³ Includes Motor Vehicle Rental Usage tax.

⁴ This figure is based upon retirement of bond issues and is supplied by the Kentucky Department of Transportation.

observations generated by the Kentucky Department of Revenue. A multiplicative Holt-Winters smoothing model was fit to the data and used to generate the forecast of net gallonage consumption. The tax rate is set at 9 percent of the wholesale price with a floor of \$1/gallon, as obtained by a quarterly survey of dealers conducted by the Kentucky Department of Revenue. The rate is set one-quarter in advance based on the survey results. The rate for the first quarter of 1980-81 was determined as 9 cents/gallon based on April 1980 survey results of 97.9 cents/gallon wholesale price. The wholesale price was assumed to

remain less than or equal to \$1/gallon for the second quarter and to increase 5 cents/gallon to \$1.05/gallon respectively for the remaining two quarters of the fiscal year.

⁶The motor vehicle usage tax is the second major Transportation Fund revenue source. National forecast services, Wharton and DRI, were used to obtain price and retail sales estimates for forecasting this tax. A 10 percent decline in passenger car sales was combined with an 8 percent increase in price to generate the 1980-81 Kentucky forecast of the Motor Vehicle Usage tax.

The Revised Outlook for Kentucky Tax Revenues

by Lawrence K. Lynch*

The sharp drop in economic activity in the second quarter of calendar 1980, precipitated by the stringent monetary policy adopted by the Federal Reserve Board in March 1980, led to Kentucky tax receipts well below the estimates for fiscal 1979-80 presented in the June issue of *Review & Perspective*. The recession will also lead to reduced receipts for the next two fiscal years.

In the General Fund, the major source of error was the Individual Income Tax, which was overestimated by \$45.7 million (9.0 percent). The author's estimate was high for three reasons. First, personal income grew at a rate about 1.4 percent less than the KCEA's Econometric forecast had indicated, leading to an overestimate of about \$10.3 million. Second, tax refunds were paid more promptly than in the past, so that about \$10 million in refunds which formerly would have been paid in fiscal 1980-81 were paid in fiscal 1979-80. These two factors still leave a \$25.4 million shortfall which resulted from a failure of the elasticity model. As reported in the June *Review & Perspective*, Individual Income Tax receipts tend to grow by an average of 1.5646 percent for each one percent growth in personal income. However, in fiscal 1979-80, Individual Income Tax receipts grew at a rate below the rate of growth of personal income (10.8 percent versus 11.9 percent).¹

Tax receipts from other taxes in the General Fund were overestimated by a total of \$11.4 million, due mostly to the shortfall in personal income for 1979. Transportation Fund receipts were overestimated by \$11.4 million, or 3.1 percent, due to very poor automobile sales in the spring of 1980, and a greater-than-expected decline in gasoline purchases.

With one major and several minor modifications, the elasticity model was applied to fiscal year 1979-80 reported revenues to generate estimates for fiscal year 1980-81, and again applied for fiscal 1981-82. A new KCEA econometric forecast of the Kentucky economy was available, indicating lower growth rates. The combination of a lower base (1979-80 revenues), lower growth rates for personal income, and some modifica-

tions to elasticity coefficients led to a downward revision of the revenue estimates.

The economic assumptions underlying these revenue estimates are: 1) continued restrictive/moderate federal monetary policy, which will allow the money supply to grow at targeted rates, but will not permit excessive growth, even if interest rates rise again; 2) neutral fiscal policy with some changes in the composition of federal spending toward relatively greater defense expenditures; a federal tax cut in 1981, with half going to business and half to consumers—about sufficient to offset rising FICA taxes; 3) the current recession will end no later than September 1980; the recovery will be moderate, so that "full employment" is not restored until the end of 1981, and 4) the estimates of Kentucky personal income and employment are forecasts from the KCEA Quarterly Econometric Model.²

The following table presents revised revenue estimates for the next two fiscal years, and comparable data for 1979-80. Looking first at the General Fund, it can be seen that while the *rate of growth* of tax revenues will accelerate during the next two years, the *levels* of revenues are well below the earlier estimates. The difference in Transportation Fund estimates are smaller. However, Transportation Fund revenues will continue to grow very slowly, and the level of receipts is likely to be insufficient to fund needed programs.

Notes

¹ This level of growth for income tax receipts implies an elasticity coefficient of less than unity. Although there is year-to-year variation in elasticity, the coefficient has not fallen below unity since fiscal 1963-64; the lowest coefficient in the 1970s was 1.11 in fiscal 1970-71.

² The forecast used was published in the *Council of Economic Advisors Annual Report 1980*, p. 51. The methodology used to produce these revenue estimates was described in the June issue of *Review & Perspective*, pp. 10-11. The only major methodological change in this revision was in projecting individual income tax receipts. A study of the cyclical behavior of the elasticity coefficient of this tax during the 1970s indicates that in most years it averages about 1.35, but rises sharply in years when the economy is recovering from a recession. Thus a coefficient of 1.35 was used for fiscal 1980-81, and the statistically estimated coefficient of 1.5646 was used for fiscal 1981-82 (a recovery year).

*Lawrence K. Lynch is Associate Professor of Economics and Chairman, Division of Administration and Economics, Transylvania University, Lexington, Kentucky.

GENERAL FUND AND STATE ROAD FUND TAX RECEIPTS
ACTUAL, FISCAL YEAR 1979-80
LYNCH ESTIMATES, FISCAL YEARS 1980-81 AND 1981-82
(Millions of Dollars)

Tax Source	Actual 1979-80	July 1980 Revised Estimates			
		1980-81	Percent Change	1981-82	Percent Change
Sales and Use	607.3	658.4	8.4	718.5	9.1
Individual Income	505.8	580.1	14.7	670.9	15.7
Corporation Income	158.8	166.4	4.8	189.1	13.6
Coal Severance	176.4	195.0	10.5	217.2	11.4
Less Transfer	(32.6)	(42.3) ¹	-	(42.3) ¹	-
Natural Resources Severance	-	9.2	-	10.1	9.8
Other General Fund	366.3	390.8	6.7	418.7	7.1
Total General Fund	1,782.0	1,957.6	9.9	2,182.2	11.5
Motor Fuels	179.7 ²	180.0	0.2	189.0	5.0
Motor Vehicle Usage	97.1	109.3	12.6	124.2	13.6
Coal Severance Transfer	32.6	42.3	-	42.3	-
Other Transportation Fund	53.6	56.3	5.0	59.1	5.0
Total Tax Receipts State Road Fund	363.0 ³	387.9	6.9	414.6	6.9

¹This estimate is based upon existing bond issues only, and reflects a reduction for earned income.

²Excludes motor fuels use tax of \$7.4 million in 1979-80.

³Excludes taxes of \$8.5 million not collected by the state.

Kentucky Economy: Review & Perspective
Kentucky Council of Economic Advisors
451 Commerce Building 00341
University of Kentucky
Lexington, Kentucky 40506

U.S. Postage
PAID
Non-Profit Org.
Permit No. 51
Lexington, Ky.

ADDRESS CORRECTION REQUESTED

Jeanne Long
Congressional Information Service
7101 Wisconsin Avenue
Washington, D.C. 20014

DATED MATERIAL
PLEASE RUSH